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Society for Developmental Biology 70th Annual Meeting

July 21–25, 2011

Hyatt Regency Riverwalk, Chicago, IL

Program Committee: Alexandra Joyner (Chair, SDB President), Mary Baylies, Jeremy Nance, James Umen and Debbie Yelon
Local Committee: Carole LaBonne, Peter Okkema and Vicky Prince

Program Abstract Number in ***bold italics*** Presenting Author Name in **bold** Session Room in *italics*

Wednesday, July 20

02:00 PM	09:00 PM	**2nd SDB Faculty Re-boot Camp** Organizer: Yolanda Cruz, Oberlin	*Truffles*

Thursday, July 21

08:00 AM	01:00 PM	**2nd SDB Faculty Re-boot Camp** (continuation)	*Truffles*
08:30 AM	05:00 PM	**Satellite Symposium 1** (not organized by SDB) ***Visualizing Complex Cell Dynamics in the Embryo*** Organizers: Kat Hadjantonakis, MSKCC, Dan Turnbull, NYU and Paul Kulesa, Stowers	*Regency C*
08:30 AM	05:00 PM	**Satellite Symposium 2** (not organized by SDB) ***Translating Pancreatic Development to Treat Diabetes*** Organizers: Matthias Hebrok, UCSF, Vicky Prince, U Chicago, Chris Rhodes, U Chicago and Lori Sussel, Columbia	*Regency D*
01:00 PM	06:00 PM	Meeting Registration	*Regency Main Desk*
01:00 PM	06:00 PM	Exhibits Set-up	*Riverside Center West*
03:00 PM	05:00 PM	Professional Development and Education Committee Meeting	*Atlanta*
03:00 PM	06:00 PM	Poster Session I Set-up Poster Session I themes: Education—Cell Signaling—Intracellular Signaling Pathways—Morphogenesis—Organogenesis	*Riverside Center West*

Please see poster assignment in the end of the Meeting Program

06:00 PM	08:00 PM	**Presidential Symposium**	*Regency Ballroom*
06:00 PM	06:05 PM	Welcome—**Alexandra Joyner**, SDB President, MSKCC	
06:05 PM	06:40 PM	*Hormonal control of plant growth in response to changes in the environment.* **Joanne Chory**, Salk Inst.	
06:40 PM	07:20 PM	*Studies in Drosophila of long distance signaling mediated by direct contact.* **Tom Kornberg**, UCSF	
07:20 PM	08:00 PM	*Control of branching morphogenesis during kidney development.* **Frank Constantini**, Columbia	
08:00 PM	10:00 PM	**Opening Reception with Posters and Exhibits**	*Riverside Center West*
08:00 PM	10:00 PM	**Education Poster Presentation**	*Riverside Center West*

Please see poster assignment in the end of the Meeting Program

Friday, July 22

07:30 AM	08:30 AM	**Funding Opportunities in Developmental Biology** Moderator: Ida Chow, SDB; with participation of representatives from NSF, NIH and other agencies	*Toronto*

doi:10.1016/j.ydbio.2011.05.006

08:00 AM	06:00 PM		Meeting Registration	*Regency Main Desk*
08:30 AM	12:00 PM		**Concurrent Session 1** ***Morphogenesis and Organogenesis*** Chair: Cliff Tabin, Harvard	*Regency B*
08:30 AM	09:00 AM		*Dynamics of heart dimensions in the zebrafish embryo.* **Debbie Yelon**, UCSD	
09:00 AM	09:15 AM	***1***	*Beyond guidance: A novel role for Sema-PlxnD1 signaling in vascular development.* Tomas Zygmunt, Carl M. Gay, Jordan Blondelle, Kathleen McCrone Flaherty, Paula Casey Means, **Jesus Torres-Vazquez**, NYU School of Medicine Cell Biology, New York, NY, USA; Lukas Herwig, Alice Krudewig, Heinz-Georg Belting, Markus Affolter, University of Basel, Basel, Switzerland.	
09:15 AM	09:45 AM		*Temporal and spatial roles for Gsx genes in the specification of neuronal and glial fates in the mouse telencephalon.* **Kenny Campbell**, Cincinnati Children's Hospital Medical Center	
09:45 AM	10:00 AM	***2***	*Specialized ribosomes control Hox mRNA translation and vertebrate tissue patterning.* Nadya Kondrashov, Aya Pusic, Craig Stumpf, Andrew Hsieh, Shifeng Xue, **Maria Barna**, University of California, San Francisco Biochemistry, San Francisco, CA, USA; Kunihiko Shimizu, Chiba, Japan; Junko Ishijima, Toshihiko Shiroishi, Mishima, Japan.	
10:00 AM	10:30 AM		Coffee break *Sponsored by The Node*	
10:30 AM	11:00 AM	***3***	*Regulation of secretory epithelial morphogenesis and physiological specialization.* **Deborah Andrew**, The Johns Hopkins University School of Medicine, Baltimore, MD, USA.	
11:00 AM	11:15 AM	***4***	*A novel pathway required for primary mouth formation in Xenopus laevis.* Radek Sindelka, Laura Jacox, **Hazel L. Sive**, Whitehead Institute for Biology Research, Cambridge, MA, USA; Amanda Dickson, Richmond, VA, USA.	
11:15 AM	11:45 AM	***5***	*Cell–cell interactions in plant tissue patterning: A dynamic view.* **Keitko Torii**, University of Washington Department of Biology, Seattle, WA, USA.	
11:45 AM	12:00 PM	***6***	*Epigenetic control of morphogenesis by the mouse KRAB domain protein ZFP568 and TRIM28.* Maho Shibata, Kristin Blauvelt, **Maria J. Garcia-Garcia**, Cornell University Molecular Biology and Genetics Department, Ithaca, NY, USA.	
08:30 AM	12:00 PM		**Concurrent Session 2** ***Developmental Principles Underlying Stem Cell Biology*** Chair: Fiona Doetsch, U Arizona	*Regency C*
08:30 AM	09:00 AM		*The cellular and molecular basis of regeneration in planarians.* **Peter Reddien**, Whitehead, MIT	
09:00 AM	09:15 AM	***7***	*miR-125b is an essential regulator of spinal cord injury repair.* Diaz Juan, **Karen Echeverri,** Center for Regenerative Therapies Dresden, Dresden, Germany; Matthew Coyle, Eve Tsai, Ottawa, Canada.	
09:15 AM	09:45 AM		*Shoot apical meristem maintenance in Arabidopsis.* **Jennifer Fletcher**. UC Berkeley	
09:45 AM	10:00 AM	***8***	*Par protein mediated polarization of Drosophila female germline stem cells.* **Edwin Ferguson**, Wen Lu, Olivia Casanueva, Anthony Mahowald, David Lauterbach, University of Chicago Department of Molecular Gene and Cell Biology, Chicago, IL, USA.	
10:00 AM	10:30 AM		Coffee break *Sponsored by The Node*	
10:30 AM	11:00 AM	***9***	*Stem cells to synapses: regulation of self-renewal and differentiation in the nervous system.* **Andrea Brand**, The Gurdon Institute, University of Cambridge, Cambridge, UK.	
11:00 AM	11:15 AM	***10***	*Wnt signaling controls mesodermal/neural and muscle/vascular stem cell fates during somitogenesis.* **David Kimelman**, Benjamin Martin, University of Washington Biochemistry, Seattle, WA, USA.	
11:15 AM	11:45 AM		*From pluripotent stem cells to cortical networks.* **Pierre Vanderhagen**. U Brussels, Belgium	
11:45 AM	12:00 PM	***11***	*Control of the differentiation potential of cardiac neural crest and impact on vascular performance.* **Patricia Labosky**, Nathan Mundell, Brian Nelms, Elise Pfaltzgraff, Vanderbilt University Department of Cell and Developmental Biology, Nashville, TN, USA.	
08:30 AM	10:00 AM		**Concurrent Session 3** ***Evo-Devo*** Chair: Nipam Patel, UC Berkeley	*Regency D*
08:30 AM	09:00 AM	***12***	*The convergent genetics of mimetic wing patterns.* **Chris Jiggins**, University of Cambridge, Cambridge, UK.	
09:00 AM	09:15 AM	***13***	*Sexually dimorphic regulation of wingless sculpts the Drosophila adult abdomen.* **John Yoder**, Wei Wang, Bryan Kidd, The University of Alabama, Tuscaloosa, AL, USA; Sean Carroll, The University of Wisconsin, HHMI, Madison, WI, USA.	

09:15 AM	09:45 AM		*Approaches to understanding the evolution of novelty in germ line specification.* **Cassandra Extavour**. Harvard	
09:45 AM	10:00 AM	***14***	*Long-range gene regulation by retinoic acid response elements in the mouse HoxB cluster.* **Youngwook Ahn**, Tara Alexander, Robb Krumlauf, Stowers Institute for Medical Research Krumlauf Lab, Kansas City, MO, USA.	
10:00 AM	10:30 AM		Coffee break *Sponsored by The Node*	
10:30 AM	11:00 AM	***15***	*Eco–Evo–Devo: lessons from semi-aquatic bugs.* Abderrahman Khhila, **Ehab Abouheif**, McGill University, Montreal, Canada; Locke Rowe, University of Toronto, Toronto, Canada.	
11:00 AM	11:15 AM	***16***	*A colon homologue in Elasmobranchs? Evidence.* **Nicole Theodosiou**, Alyssa Simeone, Union College Department of Biological Sciences, Schenectady, NY, USA.	
11:15 AM	11:45 AM		*Sex chromosomes and the evolution of gender.* **James Umen**. Salk	
11:45 AM	12:00 PM	***17***	*Wnt signaling in the cnidarian Nematostella vectensis: Insights into the evolution of gastrulation.* **Naveen M. Wijesena**, Shalika Kumburegama, Athula Wikramanayake, University of Miami Department of Biology, Coral Gables, FL, USA; Ronghui Xu, University of Hawaii, Honolulu, HI, USA.	
12:00 PM	12:30 PM		Box lunch at Poster/Exhibit Session I	*Riverside Center West*
12:30 PM	03:30 PM		**Poster/Exhibit Session I** Poster Session I themes: Education—Cell Signaling—Intracellular Signaling Pathways—Morphogenesis—Organogenesis Please see poster assignment in the end of the Meeting Program	*Riverside Center West*
12:30 PM	02:00 PM		Odd number boards presentation	*Riverside Center West*
02:00 PM	03:30 PM		Even number boards presentation	*Riverside Center West*
03:30 PM	05:30 PM		**Hilde Mangold Postdoctoral Symposium** *Sponsored by Genentech* Co-Chairs: Anamaria Sudarov, Cornell and Ann Wehman, NYU Eight short talk speakers will be selected from submitted abstracts by current SDB postdoctoral members and from the regional meeting postdoctoral winners. Symposium program and abstracts will be included in *Program Addendum.*	*Regency Ballroom*
05:30 PM	06:00 PM		**SDB Business Meeting**	*Regency Ballroom*
05:30 PM	06:00 PM		Coffee break	
05:30 PM	06:00 PM		Poster Session I tear down	*Riverside Center West*
06:00 PM	08:00 PM		**Plenary Session I** Chair: Richard Harland, UC Berkeley	*Regency Ballroom*
06:00 PM	06:30 PM		*Regulation of planar cell polarity during zebrafish gastrulation brain.* **Liliana Solnica-Krezel**. Washington Univ.	
06:30 PM	07:00 PM		*Translational concepts to disease: Holoprosencephaly as an example.* **Max Muenke**, NHGRI/NIH	
07:00 PM	07:30 PM		*Roles for histone modifications and chromatin regulators in C. elegans.* **Julie Ahringer**, Cambridge, UK	
07:30 PM	08:00 PM		*Developmental and evolutionary insights from the newly emerging model, Parhyale hawaiensis.* **Nipam Patel**, UC Berkeley	
08:00 PM	09:00 PM		Poster Session II set-up Poster themes: Cell Fate—Germ Cells and Gametogenesis—Cell Motility—Early Embryo Patterning—Stem Cells and Tissue Regeneration—Molecular Medicine and Development—Cell Proliferation—Functional Genomics Please see poster assignment in the end of the Meeting Program	*Riverside Center West*
08:00 PM	09:00 PM		**Board of Directors Reception for Students and Postdocs**	*Crystal Ballroom*
July 23 (Saturday)				
07:30 AM	08:30 AM		**Breakfast Technical Roundtable by Gene Tools**	*Toronto*
08:00 AM	06:00 PM		Meeting Registration	*Regency Main Desk*
08:30 AM	12:00 PM		**Concurrent Session 4** ***Cellular Mechanisms Driving Developmental Events*** Chair: Sally Moody, George Washington University	*Regency B*
08:30 AM	09:00 AM		*How to make a blood vessel sprout.* **Nathan Lawson**, U Mass Med Ctr	

09:00 AM 09:15 AM ***18*** *Gbetagamma signaling is essential for migration of the poseterior lateral line primordium in zebrafish.* Hui Xu, Songhai Chen, **Fang Lin**, The University of Iowa Anatomy and Cell Biology; Iowa City, IA, USA; Martine Behra, University of Puerto Rico, San Juan, Puerto Rico; Shawn Burgess, NIH/NHGRI, Bethesda, MD, USA.

09:15 AM 09:45 AM *Imaging of Arabidopsis cytoskeleton.* **David Ehrhardt**. Stanford

09:45 AM 10:00 AM ***19*** *Roles of localized mRNAs in lipid droplet function during cortical rotation in Xenopus.* **Douglas W. Houston**, John Olthoff, Olson David, The University of Iowa Department of Biology, Iowa City, IA, USA.

10:00 AM 10:30 AM Coffee break

10:30 AM 11:00 AM *Muscle in Drosophila and mammals: regulation of myonuclear positioning.* **Mary Baylies**. MSKCC

11:00 AM 11:15 AM ***20*** *Src64 regulates myosin regulatory light chain during basal closure of the Drosophila cellular blastoderm.* **Jeffrey H. Thomas**, Rafael Rosales, Ashish Chougule, Texas Tech University Health Sciences Center Cell Biology and Biochem, Lubbock, TX, USA.

11:15 AM 11:45 AM ***21*** *Signaling and mechanics: extracellular ATP regulates global gastrulation movements by controlling epithelial contractility.* **Lance Davidson**, Mike von Dassow, Sagar Joshi, Pittsburgh, PA, USA.

11:45 AM 12:00 PM ***22*** *Determining the role of the centrosome in establishing epithelial cell polarity.* **Jessica Feldman**, James Priess, Fred Hutchinson Cancer Research Center/HHMI Basic Sciences, Seattle, WA, USA.

08:30 AM 12:00 PM **Concurrent Session 5** *Regency C*

Systems and Network Biology

Chair: Henry Krause, Univ. of Toronto, Canada

08:30 AM 09:00 AM ***23*** *Mapping spatiotemporal gene regulatory networks in the Arabidopsis root stele.* Mallorie Taylor-Teeples, Allison Gaudinier, **Siobhan M. Brady**, UC Davis Plant Biology, Davis, CA, USA; Lifang Zhang, Doreen Ware, Cold Spring Harbor, USA; John Reece-Hoyes, Marian Walhoug, Worcester, MA, USA; Sebastian Ahnert, Cambridge, MA, USA.

09:00 AM 09:15 AM ***24*** *Web-based algorithms EvoPrinter and cis-Decoder reveal functional sequences in enhancers and complex networks of transcription factor interactions required for gene regulation.* **Thomas Brody**, Alexander Kuzin, Mukta Kundu, Jermaine Ross, Leonard Tyson, Yavatkar Amar, Ward F. Odenwald, NINDS, NIH Neural Cell-Fate Determinants Sect, Bethesda, MD, USA.

09:15 AM 09:45 AM ***25*** *Transcriptional mechanisms underlying sonic hedgehog mediated regulation.* **Steven Vokes**, University of Texas at Austin Section of Molecular Cell and Developmental Biology, Austin, TX, USA.

09:45 AM 10:00 AM ***26*** *Hedgehogome; hedgehog signaling proteome analysis for understanding craniofacial and brain development.* **Kazuski Aoto**, Paul Trainor, Stowers Institute for Medical Research, Kansas City, MO, USA.

10:00 AM 10:30 AM Coffee break

10:30 AM 11:00 AM TBD. **Fabio Piano**, NYU

11:00 AM 11:15 AM ***27*** *A computational model reveals the remarkable patterning potential of the Wnt-FGF gene regulatory network in the posterior lateral line primordium.* **Ajay Chitnis**, Damian Dalle Nogare, NICHD Lab of Molecular Genetics, Bethesda, MD, USA.

11:15 AM 11:45 AM *Canalization and error correction in the Drosophila blastoderm.* **John Reinitz**, U Chicago

11:45 AM 12:00 PM ***28*** *Modulation of hindlimb gene expression patterns by Pitx1* Sungdae Park, Carlos Infante, Alexandra Mihala, **Douglas B. Menke**, University of Georgia Genetics, Athens, GA, USA.

08:30 AM 12:00 PM **Concurrent Session 6** *Regency D*

Extracellular Influences in Tissue Development

Chair: Tom Schilling, UC Irvine

08:30 AM 09:00 AM *Postnatal development of the intervertebral disc; yes, we still have notochords.* **Chris Wylie**, Cincinnati Children's Hospital Med Ctr

09:00 AM 09:15 AM ***29*** *Simultaneous cleavage of both sites of proBMP4 leads to loss of activity in mice, perhaps due to disrupted interactions with the ECM.* Anup Tilak, Sylvia Nelsen, Nathan Donley, Hyungjung Lee, **Jan Christian**, Oregon Health and Sciences University Department of Cell and Developmental Biology, Portland, OR, USA.

09:15 AM 09:45 AM *Morphogenesis of astrocytes.* **Marc Freeman**. U Mass Medical Center

09:45 AM 10:00 AM ***30*** *Lens and optic cup formation: A case of matrix-mediated morphogenesis.* **David C. Beebe**, Jie Huang, Ramya Rajagopal, Ying Liu, Ben Filas, Larry Taber, Washington University Opthalmology and Visual Sciences, St. Louis, MO, USA.

10:00 AM 10:30 AM Coffee break

10:30 AM	11:00 AM		*Signaling during pollen tube growth.* **Sheila McCormick**. UC Berkeley	
11:00 AM	11:15 AM	***31***	*Proximal-distal patterning of the vertebrate limb is initiated by altered exposure to secreted signals.* **Kimberly L. Cooper**, Jimmy Kuang-Hsien Hu, Clifford J. Tabin, Harvard Medical School Genetics, Boston, MA, USA; Derk ten Berge, Erasmus Stem Cell Institute; Marian Fernandez-Teran, Maria A. Ross, Universidad de Cantabria, Santander, Spain.	
11:15 AM	11:45 AM		*Mouse MMPs in development and disease.* **Zena Werb**. UCSF	
11:45 AM	12:00 PM	***32***	*Genetic rescue of hearing loss in a mouse model of Muenke* Syndrome. **Suzanne L. Mansour**, Lisa D. Urness, Chaoying Li, University of Utah Department of Human Genetics, Salt Lake City, UT, USA.	
12:00 PM	12:30 PM		Box lunch at Poster/Exhibit Session II	*Riverside Center West*
12:30 PM	03:30 PM		**Poster/Exhibit Session II** Poster themes: Cell Fate—Germ Cells and Gametogenesis—Cell Motility—Early Embryo Patterning—Stem Cells and Tissue Regeneration—Molecular Medicine and Development—Cell Proliferation—Functional Genomics	*Riverside Center West*
Please see poster assignment in the end of the Meeting Program				
12:30 PM	02:00 PM		Odd number boards presentation	*Riverside Center West*
02:00 PM	03:30 PM		Even number boards presentation	*Riverside Center West*
03:30 PM	05:30 PM		**Education Symposium**	*Regency Ballroom*
03:30 PM	05:30 PM	***33***	***New Materials and New Methods: Innovative Strategies for Integrating New Material into Syllabi.*** Chair: Scott F. Gilbert, Swartmore College Discussants: Nipam Patel, UC Berkeley, Berkeley, CA, USA; Yolanda P. Cruz, Oberlin College, Oberlin, OH, USA; Michael Barresi, Smith College, Northampton, MA, USA; Laurie Iten, Purdue University, West Lafayette, IN, USA; Scott F. Gilbert, Swartmore College, Swarthmore, PA, USA. Open Audience Discussion	
05:30 PM	06:00 PM		Coffee break	*Regency Ballroom*
05:30 PM	06:00 PM		Poster Session II tear down	*Riverside Center West*
06:00 PM	08:00 PM		**Plenary Session II** Chair: 2012 SDB President-elect	*Regency Ballroom*
06:00 PM	06:30 PM		*Development and evolution of the vertebrate limb*. **Cliff Tabin**. Harvard	
06:30 PM	07:00 PM	***34***	*How a leaf is patterned.* **Sarah Hake**, Nathalie Bolduc, Devin O'Connor, Jihyun Moon, Michael Lewis, USDA-ARS and UC Berkeley, Berkeley, CA, USA.	
07:00 PM	07:30 PM	***35***	*A functional genomics investigation of neurogenesis.* **François Guillemot**, National Institute for Medical Research, London, UK.	
07:30 PM	08:00 PM		*Stem cells and their niche in the adult mammalian.* **Fiona Doestch**, Univ. of Arizona	
08:00 PM	10:00 PM		**Education Hands-on Workshop** Organizer: Diana Darnell, U Arizona	*Toronto*
		36	*Chicks in science! Helping students grok vertebrate embryo morphogenesis, primary literature and biology databases through active and service learning.* **Diana Darnell**, University of Arizona, Tucson, AZ, USA.	
08:00 PM	9:00 PM		Poster Session III set-up Poster themes: Patterning and Transcription Factors - Development and Evolution – Gene Regulation – Late Abstracts	*Riverside Center West*
Please see poster assignment in the end of the Meeting Program				

July 24 (Sunday)

08:00 AM	06:00 PM		Meeting Registration	*Regency Main Desk*
08:30 AM	12:00 PM		**Concurrent Session 7** ***Specification and Lineage Allocation during Development*** Chair: Guillermo Oliver, St. Jude Children Research Hospital	*Regency B*
08:30 AM	09:00 AM	***37***	*Redefining brain serotonergic neurons by genetic lineage and selective in vivo silencing.* **Susan Dymecki**, Russell Ray, Rachael Brust, Harvard Medical School Genetics, Cambridge, MA, USA; Patricia Jensen, National Institute of Environmental Health Services, Research Triangle Park, NC, USA; Jun Chul Kim, University of Toronto, Toronto, Canada; Andrea Corcoran, Eugene Nattie, Dartmouth Medical School, Lebanon NH, USA; George Richerson, University of Iowa Hospitals and Clinics, Iowa City, IA, USA.	

09:00 AM 09:15 AM ***38*** *Lineage tracing of Tbx4-expressing cells reveals cryptic developmental decisions.* **L.A. Naiche**, Mark Lewandoski, National Cancer Institute, Frederick, MD, USA; Ripla Arora, Virginia Papaioannou, Columbia University, New York, NY, USA.

09:15 AM 09:45 AM ***39*** *Genetic and genomic dissection of a cell specification pathway in Arabidopsis.* **John Schiefelbein**, University of Michigan, Ann Arbor, MI, USA.

09:45 AM 10:00 AM ***40*** *Neurons develop in situ in foregut endoderm of sea urchin embryos.* Zheng Wei, Robert Angerer, **Lynne M. Angerer**, NIH NIDCR, Bethesda, MD, USA.

10:00 AM 10:30 AM Coffee break

10:30 AM 11:00 AM ***41*** *Sensory neuron specification in the neural crest lineage.* Andrew Prendergast, Tor Linbo, Tanya Swarts, Josette Ungos, Hillary McGraw, **David Raible**, University of Washington, Seattle, WA, USA.

11:00 AM 11:15 AM ***42*** *Jagged-Notch, Edn1, and Bmp signaling define discrete preskeletal domains along the dorsoventral axis of the vertebrate face.* **Gage Crump**, Elizabeth Zuniga, Marie Rippen, USC Keck School of Medicine CSCRM, Los Angeles, CA, USA; Courtney Alexander, Tom Schilling, UC Irvine, Irvine, CA, USA.

11:15 AM 11:45 AM ***43*** *Imaging endoderm cell dynamics in the mouse embryo.* **Anna-Katerina Hadjantonakis**, Sloan-Kettering Institute, New York, NY, USA.

11:45 AM 12:00 PM ***44*** *Size-dependent regulation of dorsal-ventral patterning in the early Drosophila embryo.* **Marcos Nahmad**, Angelike Stathopoulos, California Institute of Technology Division of Biology, Pasadena, CA, USA; Gregory Reeves, North Carolina State University, Raleigh, NC, USA.

08:30 AM 12:00 PM **Concurrent Session 8** *Regency C*

Translating Developmental Concepts to Disease

Chair: Max Muenke, NHGRI

08:30 AM 09:00 AM ***45*** *Stem cells in prostate regeneration and cancer.* **Michael M. Shen**, Zhu Wang, Xi Wang, Marianna Kruithof-de Julio, Ming Lei, Chee Wai Chua, Cory Abate-Shen, Columbia University Medical Center, New York, NY, USA.

09:00 AM 09:15 AM ***46*** *Hectd1 regulates intracellular trafficking of Hsp90 to control its secretion and cell motility of the cranial mesenchyme.* Anjali Sarkar, **Irene Zohn**, Children's National Medical Center, Washington, DC, USA.

09:15 AM 09:45 AM *Reconstructing the developmental path of pancreatic insulin-producing beta-cells.* **Maike Sander,** UCSD

09:45 AM 10:00 AM ***47*** *A mechanistic basis for craniofacial anomalies associated with craniofrontonasal syndrome.* **Jeff O. Bush**, University of California at San Francisco Cell and Tissue Biology, San Francisco, CA, USA; Philippe Soriano, Mount Sinai School of Medicine, New York, NY, USA.

10:00 AM 10:30 AM Coffee break

10:30 AM 11:00 AM ***48*** *A fly approach to cancer and diabetes.* **Ross Cagan**, Mount Sinai School of Medicine, New York, NY, USA.

11:00 AM 11:15 AM ***49*** *Using the zebrafish as a tool for analysis of autism risk gene function.* **Alicia L. Blaker-Lee**, Sunny Gupta, Hazel Sive, Whitehead Institute of Biology, Cambridge, MA, USA.

11:15 AM 11:45 AM *Glial development and myelination in zebrafish*. **Will Talbot**. Stanford

11:45 AM 12:00 PM ***50*** *Genetic interaction between diabetes genes hnf1b and wnt2bb specifies hepatopancreatic progenitors.* Joseph Lancman, Danhua Zhang, Keith Gates, **P. Duc Dong**, Sanford-Burnham Medical Research Institute, La Jolla, CA, USA; Christopher Wright, Nashville, TN, USA; Didier Stanier, San Francisco, CA, USA.

08:30 AM 12:00 PM **Concurrent Session 9** *Regency D*

Cell and Tissue Polarity

Chair: Sarah Hake, USDA-ARS, UC Berkeley

08:30 AM 09:00 AM ***51*** *An E-Cadherin-mediated hitchhiking mechanism for C. elegans germ cell internalization during gastrulation.* Daisuke Chihara, **Jeremy Nance**, Skirball Institute, NYU School of Medicine, New York, NY, USA.

09:00 AM 09:15 AM ***52*** *Gpr125 - a novel planar cell polarity pathway component in zebrafish*. **Xin Li**, Heidi Hamm, Nashville, TN, USA; Florence Marlow, Bronx, NY, USA; Lilianna Solnica-Krezel, St. Louis, MO, USA.

09:15 AM 09:45 AM *Investigating the functional link between cilia and planar cell polarity signaling during embryonic development and disease.* **Brian Ciruna**. HSC, Canada

09:45 AM 10:00 AM ***53*** *Scribble is required for normal lumen morphogenesis in the mammalian lung.* Laura Yates, Lee Hazelwood, Lauren Chessum, Anju Paudyal, Andy Greenfield, **Charlotte Dean**, Harwell, UK; Carsten Schnatwinkel, Lee Niswander, University of Colorado Denver School of Medicine, Aurora, CO, USA; Clare Lloyd, London, UK.

10:00 AM 10:30 AM Coffee break

10:30 AM 11:00 AM *Fat cadherins in PCP & growth regulation in flies and mice.* **Helen McNeill**. Lunenfeld Res Inst, Canada

11:00 AM	11:15 AM	***54***	*The misshapen kinase negatively regulates integrin levels to promote collective cell migration in Drosophila.* **Sally Horne-Badovinac**, Lindsay Lewellyn, University of Chicago Molecular Genetics and Cell Biology, Chicago, IL, USA.	
11:15 AM	11:45 AM	***55***	*Phosphoinositide(3,5) bis phosphate is essential for formin-mediated polarized growth.* Ming Li, Peter van Gisbergen, **Magdalena Bezanilla**, University of Massachusetts Amherst, Amherst, MA, USA.	
11:45 AM	12:00 PM	***56***	*Planar polarity signaling negatively regulates neurite formation to maintain neuronal morphology in C. elegans.* Jiravat Visanuvimol, Leticia Sanchez-Alvarez, Andrea McEwen, **Antonio Colavita**, University of Ottawa Cellular and Molecular Medicine, Ottawa, Canada.	
12:00 PM	12:30 PM		Box lunch at Poster/Exhibit Session III	*Riverside Center West*
12:30 PM	03:30 PM		**Poster/Exhibit Session III** Poster themes: Patterning and Transcription Factors—Development and Evolution—Gene Regulation—Late Abstracts	*Riverside Center West*
Please see poster assignment in the end of the Meeting Program				
12:30 PM	02:00 PM		Odd number board presentation	*Riverside Center West*
02:30 PM	03:30 PM		Even number board presentation	*Riverside Center West*
03:30 PM	04:00 PM		Coffee break	*Regency Ballroom*
03:30 PM	06:00 PM		Poster and Exhibits tear down	*Riverside Center West*
04:00 PM	06:10 PM		**Awards Lectures**	*Regency Ballroom*
04:00 PM	04:40 PM		FASEB Excellence in Science Award: *FGF and vertebrate organogenesis*. **Gail Martin**, UCSF. Presentation by William Talman, FASEB President	
04:40 PM	05:20 PM		E.G. Conklin Medal: *Germ cells are forever*. **Ruth Lehmann**, NYU. Presentation by Alexandra Joyner, SDB President	
05:20 PM	05:30 PM		*Developmental Biology*-SDB Lifetime Achievement Award: **Peter Lawrence**, *in absentia*. Presentation by Mike Levine, SDB President-elect	
05:30 PM	06:10 PM	***57***	V. Hamburger Outstanding Educator Prize: *Differential Expressions: Using Multimedia to Ignite Inquiring Minds.* **Mary Tyler**, University of Maine, Orono, ME, USA. Presentation by Scott Gilbert, SDB Professional Development and Education Committee Chair	
06:30 PM	10:00 PM		**Closing Reception and Awards Banquet**	*Crystal Ballroom*

July 25 (Monday)

08:30 AM		Departure	
08:30 AM	04:00 PM	SDB Board of Directors Meeting	*Board of Trade*

ACKNOWLEDGMENTS

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Contributors: *Developmental Biology*-Elsevier, Andor Technology/Bitplane Inc, *Annual Reviews*, Carl Zeiss MicroImaging LLC, Colloquium (Morgan & Claypool), Developmental Studies Hybridoma Bank, FASEB-MARC, Fluidity Software Inc, Gene Tools LLC, Genentech *genesis*, Leica Microsystems, Protech International Inc, The Node

Exhibitors: *Developmental Biology*-Elsevier, Andor Technology/Bitplane Inc, BioMedCentral, Cold Spring Harbor Laboratory Press, *Developmental Dynamics*, EMAGE, FASEB-MARC, Gene Tools LLC, Hamilton Thorne Inc, Intavis Inc, Leica Microsystems, MBL-Embryology Course, Sinauer Associates Inc Publ, The Company of Biologists, Wiley-Blackwell

POSTER and EXHIBIT SESSIONS

Program Abstract Number in ***bold italic***. Poster Board Number in **Bold**

Poster and Exhibit Session I

Friday, July 22, 12:30–3:30 PM *Riverside Center West*

Author presentation: Odd board numbers—12:30–2 PM
Even board numbers—2–3:30 PM

Set-up: Thursday, July 21, 4–10 PM Tear down: Friday, July 22, 5:30–6 PM

Poster themes: Education—Cell Signaling—Intracellular Signaling Pathways—Morphogenesis—Organogenesis

Education

58 **B1** **A forward genetic screen as a developmental biology laboratory exercise for undergraduates identifies gene candidates that regulate embryonic CNS development in Drosophila.** Leal, Sandra, *Univ of Southern Mississippi Dept of Biological Sciences, Hattiesburg, MS*; Warren, Katherine, *University of Southern Mississippi, Hattiesburg, MS*; Buchanan, Jonathan, *University of Southern Mississippi, Flowood, MS*

59 **B2** **Engage and Explore: Carrying Out Small and Publishable Research in the Classroom.** Pu, Rongsun, *Kean University Dept of Biological Sciences, Union, NJ*

60 **B3** **Use of the Zebrafish as a teaching and research tool at a primarily undergraduate institution.** Mills, Zachary, *St. John Fisher College, Rochester, NY*; Schrimmel, Lindsey, *Rochester, NY*; Hefti, Erik, *Rochester, NY*; Ryan, Courtney, *Rochester, NY*; Hurd, Daryl, *St. John Fisher College, Rochester, NY*; Freeman, Edward, *St. John Fisher College Biology, Rochester, NY*

61 **B4** **EUKARYON: an undergraduate scholarship journal that supports inquiry-based pedagogy and strengthens a community of undergraduate scholars.** Rizvydeen, Saajidha, *Lake Forest College, Lake Forest, IL*; Konnikova, Alina, *Lake Forest College, Lake Forest, IL*; Senagolage, Madhavi, *Lake Forest College, Lake Forest, IL*; DebBurman, Shubhik, *Lake Forest College, Lake Forest, IL*; Smith, Pliny A., *Lake Forest College Biology, Lake Forest, IL*

62 **B5** **Service Learning with GEISHA and other online databases.** Darnell, Diana, *University of Arizona Cellular & Molecular Medicine, Tucson, AZ*; Chapman, Susan, *Clemson University, Clemson, SC*; Stark, Michael, *Provo, UT*; Barrow, Jeff, *Provo, UT*; Antin, Parker, *University of Arizona Cellular & Molecular Medicine, Tucson, AZ*

63 **B6** **Using Writing to Teach Developmental Biology, Using Developmental Biology to Teach Writing: Assessment Tools.** Forristall, Caryl A., *University of Redlands Department of Biology, Redlands, CA*

64 **B7** **Demystifying and humanizing research through intensive analysis of primary literature—-testing the C.R.E.A.T.E. approach in diverse student populations and topic areas.** Hoskins, Sally G., *City College of New York Dept of Biology-MR-607, New York, NY*; Stevens, Leslie, *University of Texas—-Austin, Austin, TX*

65 **B8** **Society for Developmental Biology at the USA Science & Engineering Festival.** Lucas, Marsha; Chow, Ida, *Society for Developmental Biology, Bethesda, MD*

Cell Signaling

66 **B9** **Regulation of Mammalian Notch Signaling and Embryonic Development by the Protein O-Glucosyltransferase Rumi.** Fernandez-Valdivia, Rodrigo, *Institute of Molecular Medicine, University of Texas Health Science Center at Houston, Houston, TX;* Takeuchi, Hideyuki, *Stony Brook University, Stony Brook, NY*; Samarghandi, Amin, *Institute of Molecular Medicine, University of Texas Health Science Center at Houston, Houston, TX;* Lopez, Mario, *Institute of Molecular Medicine, University of Texas Health Science Center at Houston, Houston, TX*; Leonardi, Jessica, *Baylor College of Medicine, Houston, TX*; Haltiwanger, Robert, *Stony Brook University, Stony Brook, NY*; Jafar-Nejad, Hamed, *Institute of Molecular Medicine, University of Texas Health Science Center at Houston, Houston, TX*

67 **B10** **Requirements for Jag1-Rbpj mediated Notch signaling during early lens development.** Le, Tien, *Cincinnati Children's Research Foundation, Cincinnati, OH*; Conley, Kevin, *Cincinnati Children's Research Foundation, Cincinnati, OH*; Mead, Timothy, *Cincinnati Children's Research Foundation, Cincinnati, OH*; Rowan, Sheldon, *Harvard Medical School, Boston, MA*; Yutzey, Katherine, *Cincinnati Children's Research Foundation, Cincinnati, OH*; Brown, Nadean L., *Cincinnati Children's Res Fnd Div Devel Biol, Cincinnati, OH*

68 **B11** **CoREST Acts as a Positive Regulator of Notch Signaling in the Follicle Cells of Drosophila.** Domanitskaya, Elena, *HHMI / Princeton University, Princeton, NJ;* Schupbach, Trudi, *HHMI / Princeton University, Princeton, NJ*

69 **B12** **Establishment of transgenic lines that report nervous system specific Notch activity based on nort gene regulatory sequence.** Miesfeld, Joel B., *Medical College of Wisconsin Cell Biology, Neurobiology, & Anatomy, Milwaukee, WI*; Clark, Brian S., *Milwaukee*; Link, Brian A., *Milwaukee, WI*

70 **B13** **Neuropeptide Signaling in Planarian Sexual Development and Regeneration.** Saberi, Amir, *University of Illinois at Urbana-Champaign, Urbana, IL*; Collins, James, *University of Illinois at Urbana-Champaign, Urbana, IL*; Newmark, Phillip, *University of Illinois at Urbana-Champaign, Urbana, IL*

71 **B14** **Lefty Activity is Regulated by Prodomain-Mature Lefty Interaction.** Vasquez, Adrian, *Wayne State University, Detroit, MI*; Balancio, Amapola, *Wayne State University, Detroit, MI*; Nowakowski, James, *Wayne State University, Detroit, MI*; Branford, William, *Wayne State University, Detroit, MI*

72 **B15** **Regulation of angiogenesis by a Wnt-Flt1 pathway in myeloid cells.** Stefater, James A., *Cincinnati Children's Hospital Developmental Biology, Cincinnati, OH*; Lewkowich, Ian, *Cincinnati, OH*; Rao, Sujata, *Cincinnati, OH*; Mariggi, Giovanni, *London, UK*; Carpenter, April, *Cincinnati, OH*; Burr, Adam, *Cincinnati, OH*; Fan, Jieqing, *Cincinnati, OH*; Ajima, Rieko, *Frederick, MD*; Molkentin, Jeffery, *Cincinnati, OH*; Williams, Bart, *Cincinnati, OH*; Wills-Karp, Marsha, *Cincinnati, OH*; Pollard, Jeffrey, *Bronx*; Yamaguchi, Terry, *Frederick, MD*; Ferrara, Napoleone, *San Francisco, CA*; Gerhardt, Holger, *London, UK*; Lang, Richard, *Cincinnati, OH*

73 **B16** **Notum 1a is a Specific Inhibitor Wnt/Beta-Catenin Signaling.** Flowers, G Parker, *Northwestern University, Chicago, IL*; Topczewska, Jolanta, *Chicago, IL*; Topczewski, Jacek, *Chicago, IL*

74 **B17** **Reduction of Cellular Sulfation During Mouse Brain Development Results in Microcephaly Marked by Neuronal Cell Death and Abnormal Neuronal Progenitor Proliferation.** Cortes, Mauricio, *The University of Chicago, Chicago, IL*; Cortes, Leslie K., *The University of Chicago, Chicago, IL*; Domowicz, Miriam S., *The University of Chicago, Chicago, IL*; Schwartz, Nancy B., *The University of Chicago, Chicago, IL*

75 **B18** **The role of glycosaminoglycans in FGF diffusion during lacrimal gland branching morphogenesis.** Qu, Xiuxia, *IUPUI, Indianapolis, IN*; Pan, Yi, *Shanghai, China*; Zhang, Xin, *Indianapolis, IN*

76 **B19** **Sulfatases modulate FGF and Hedgehog signaling during zebrafish organogenesis.** Ebrom, Pierson, *Colgate University, Hamilton, NY*; Wade, Emma, *University of York, York, UK*; Pownall, Mary, *University of York, York, UK*; Meyers, Jason, *Colgate University Department of Biology, Hamilton, NY*

77 B20 **Shh is required for the maintenance of postnatal mouse intervertebral disc**
Dahia, Chitra L., *Cincinnati Children's Orthopaedic Surgery, Cincinnati, OH*; Mahoney, Eric, *Cincinnati, OH*; Wylie, Chris, *Cincinnati, OH*

78 B21 **Cellular and molecular events regulating myoblast fusion in mammals.** Yu, Shannon, *Gerstner Sloan Kettering Grad Sch Developmental Biology, New York, NY,*; Baylies, Mary K., *Program in Developmental Biology, Sloan-Kettering Institute, New York, NY*

79 B22 **Live Imaging of the Mouse Eye Implicates Endothelial Membrane Microparticles in Developmentally Programmed Hyaloid Vessel Regression.** Poche, Ross, *Baylor College of Medicine, Houston, TX*; Fairbank, Rachel, *Houston, TX*; Hsu, Logan, *Houston, TX*; Dickinson, Mary, *Houston, TX*

80 B23 **Integrins are required for glial and neuronal development in Drosophila eye.** Xie, Xiaojun, *The University of British Columbia Zoology, Vancouver, BC, Canada*; Auld, Vanessa, *the University of British Columbia, Vancouver, BC, Canada*

81 B24 **Developing tools to study calcium signaling in a neuronal gap junction network.** Tucker, Jennifer A., *Cincinnati Children's Hospital Developmental Biology, Cincinnati, OH*; Chang, Chieh, *Cincinnati Children's Hospital, Cincinnati, OH*; Chuang, Chiou-Fen, *Cincinnati Children's Hospital, Cincinnati, OH*

82 B25 **XTRIC-8, a protein required for proper neural crest formation.** Torrejon, Marcela E., *University of Concepcion Dept. Biochemistry & Molecular Biol, Concepcion, Chile*; Fuentealba, Jaime, *University of Concepcion, Concepcion, Chile*; Arriagada, Cecilia, *University of Concepcion, Concepcion, Chile*; Toro-Tapia, Gabriela, *University of Concepcion, Concepcion, Chile*; Riquelme, Lester, *University of Concepcion, Concepcion, Chile*; Hinrichs, Maria Victoria, *University of Concepcion, Concepcion, Chile*; Olate, Juan, *University of Concepcion, Concepcion, Chile*

83 B26 **Tetraspanin18 restricts neural crest migration by modulating Cadherin6B mRNA and protein levels.** Fairchild, Corinne L., *Univ of Minnesota-Twin Cities Genetics, Cell Bio, Development, Minneapolis, MN*; Gammill, Laura S., *University of Minnesota, Minneapolis, MN*

84 B27 **The retinal pigment epithelium as a model tissue to study the effects of Lrp2/megalin on BMP signaling.** Collery, Ross F., *Medical College of Wisconsin Cell Biology, Neurobiology & Anatomy, Milwaukee, WI*; Link, Brian, *Medical College of Wisconsin, Milwaukee, WI*

85 B28 **Role of Aggrecan in growth plate development: Use of genetically altered mouse models.** Cortes, Mauricio, *University of Chicago, Department of Pediatrics, Chicago, IL*; Domowicz, Miriam, *University of Chicago, Department of Pediatrics, Chicago, IL*; Schwartz, Nancy B., *Univ of Chicago Dept of Pediat Biochem Molec & Develop Biol, Chicago, IL*

Intracellular Signaling Pathways

86 B29 **A re-evaluation of two key reagents for *in vivo* studies of wnt signaling.** Ahrens, Molly, *Northwestern Univ Children's Memorial Research Center, Chicago, IL*; Sarah, Romereim, *Evanston, IL*; Andrew, Dudley, *Evanston, IL*

87 B30 **The role of the dual Bmp/Wnt inhibitor Sostdc1 in adult pancreas function.** Henley, Kathryn, *Vanderbilt University Dept of Cell & Developmental Biology, Nashville, TN*; Econimides, Aris, *Regeneron Pharmaceuticals, Inc., Tarrytown, NY*; Gannon, Maureen, *Vanderbilt University, Nashville, TN*

88 B31 **Axin promotes canonical Wnt signaling in the late primitive streak of mouse embryos.** Mahaffey, James, *Sloan-Kettering Institute Developmental Biology, New York, NY*; Qian, Lihui, *Weill Graduate School of Medical Sciences, New York, NY*; Anderson, Kathryn, *Gerstner Sloan-Kettering, New York, NY*

89 B32 **Activation of Wnt signaling by reactive oxygen species.** Hwang, Jason, *University of Western Ontario, London, ON, Canada*; Wen, Jason, *Toronto, ON, Canada*; Kelly, Gregory, *University of Western Ontario, London, ON, Canada*

90 B33 **Primary cilia demonstrate polarization at early stages of neurulation.** McFarland, Rebecca, *University of Maryland, Baltimore County, Catonsville, MD*; Brewster, Rachel, *University of Maryland, Baltimore County, Catonsville, MD*

91 B34 **Tau Tubulin Kinase 2 is Required for Mammalian Ciliogenesis and Hedgehog Signaling.** Goetz, Sarah, *Memorial Sloan-Kettering Cancer Center Developmental Biology, New York, NY*; Anderson, Kathryn, *Sloan-Kettering Institute, New York, NY*

92 B35 **The oxygen sensor fatiga controls Drosophila oogenesis through the regulation of FoxO.** Acevedo, Julieta, *Buenos Aires, Argentina*; Wappner, Pablo, *Buenos Aires, Argentina*

93 B36 **Endoplasmic reticulum remodeling tunes IP3 receptor sensitivity.** Sun, Lu, *Weill Cornell Medical College Qatar, Doha, Qatar*; Yu, Fang, *Doha, Qatar*; Machaca, Khaled, *Doha, Qatar*

94 B37 **The Ras/Erk signal transduction cascade mediates the morphogen-like activites of FGF8 in the developing telencephalon.** Gulden, Forrest O., *University of Chicago Committee on Neurobiology, Chicago, IL*; Grove, Elizabeth A., *Department of Neurobiology, University of Chicago, Chicago, IL*

95 B38 **Expression of EGF-Responsive ERK5 in Embryonic Mouse Submandibular Glands.**
Kashimata, Masanori, *Asahi Univ Sch of Dentistry Dept of Pharmacology, Mizuho, Japan*; Koyama, Noriko, *Asahi Univ Sch of Dentistry Dept of Pharmacology, Mizuho, Japan*; Hayashi, Toru, *Asahi Univ Sch of Dentistry Dept of Pharmacology, Mizuho, Japan*; Gresik, Edward, *Sophie Davis School of Biomedical Education, NY, NY*

96 B39 **More Avast! for dorsal closure: Characterization of acal and its relation with Drosophila Jun N-terminal Kinase signaling.** Rios-Barrera, Luis Daniel, *Universidad Nacional Autonoma de Mexico (UNAM) Developmental Neurobiology, Juriquilla, Mexico*; Riesgo-Escovar, Juan R, *Instituto de Neurobiologia UNAM, Queretaro, Mexico*

97 B40 **The antagonistic action of B56-containing PP2As and Casein Kinase II controls the function of Dzip1 in regulation of the stability of Gli transcription factors.** Yang, Jing, *Columbus, OH;* Jin, Zhigang, *Columbus, OH*

98 B41 **Lens-derived signals regulate Foxc1 expression during corneal endothelial development.** Naidoo, Jerolen, *University of KwaZulu-Natal, Durban, South Africa*; Kidson, Susan, *University of Cape Town, Cape Town, South Africa*; Sommer, Paula, *University of KwaZulu-Natal, Durban, South Africa*

99 B42 **Absence of MCP-1 results in decreased actin ring formation via an aberrant M-CSF signaling.** Ke, Ke, *University of Ulsan, Ulsan, Republic of Korea*; Choi, Hye-Seon, *University of Ulsan, Ulsan, Republic of Korea*

100 B43 **Control of cortical actin assembly and cadherin-catenin localization by RhoGTPases.** Jimenez-Dalmaroni, Maximiliano Javier, *Cincinnati Children's Hospital Research Foundation Developmental Biology, Cincinnati, OH*; Shoemaker, Amanda, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Heasman, Janet, *Cincinnati, OH*; Wylie, Christopher, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

Morphogenesis

101 **B44** **Secretion of Lunatic fringe is essential for somitogenesis and segmentation clock function.** Williams, Dustin R., *The Ohio State University Molecular Genetics, Columbus, OH*; Shifley, Emily T., *Cincinnati Children's Hospital, Cincinnati, OH*; Cole, Susan E., *Dept. of Mol. Gen., The Ohio State University, Columbus, OH*

102 **B45** **Premature downregulation of Tbx6 within the tailbud alters cell fates and leads to premature termination of axial elongation.** Freese, Nowlan H., *Clemson University Biological Sciences, Clemson, SC*; Scott, Allison, *Clemson University, Clemson, SC;* Chapman, Susan, *Clemson University, Clemson, SC*

103 **B46** **Elucidating the role of Hoxa-5 in the development of the chick axial skeleton.** Chen, Jessica, *Barnard College, New York, NY*; Zahid, Soombal, *Barnard College, New York, NY*; Weaver, Sara, *B, New York, NY*; Shilts, Meghan, *Barnard College, New York, NY*; Mansfield, Jennifer, *Barnard College, New York, NY*

104 **B47** **Investigations of early and late onset scoliotic curvatures in zebrafish.** Gray, Ryan S., *Washington University School of Medicine Developmental Biology, St. Louis, MO*; McAdow, Anthony, *St. Louis, MO*; Johnson, Stephen, *St. Louis, MO*; Solnica-Krezel, Lilianna, *St. Louis, MO*

105 **B48** **Molecular mechanisms underlying *Xenopus* somite morphogenesis.** Domingo, Carmen R., *San Francisco State Univ Biology, San Francisco, CA*; Leal, Marisa, *San Francisco State University, San Francisco*; Quinonez, Diana, *San Francisco State University, San Francisco*; Fickel, Sarah, *San Francisco State University, San Francisco*; Sabillo, Armbien, *San Francisco State University, San Francisco*; Greene, Mary, *San Francisco State University, San Francisco*

106 **B49** **Dynamin is required for the maintenance of EVL cell polarity and the progression of epiboly in the developing zebrafish embryo.** Lepage, Stephanie, *Univ of Toronto Cell & Systems Biology, Toronto, ON, Canada*; Bruce, Ashley EE, *Toronto, ON, Canada*

107 **B50** **Alpha-Catenin Regulates Cell Cortex Stability In Zebrafish Radial Intercalation.** Nelson, James W, *Stanford, CA*; Schepis, Antonino, *Stanford University Biology, Stanford, CA*

108 **B51** **Mechanisms of primitive streak formation in the mouse embryo.** Williams, Margot L.K., *University of Virginia Cell Biology, Charlottesville, VA*; Burdsal, Carol, *Tulane University, New Orleans, LA*; Periasamy, Ammasi, *University of Virginia, Charlottesville, VA*; Sutherland, Ann, *University of Virginia, Charlottesville, VA*

109 **B52** **Wnt5b-Ryk pathway provides directional signals to regulate gastrulation movement.** Lin, Shengda, *University of Iowa, Iowa City, IA*; Baye, Lisa, *University of Iowa, Iowa City, IA*; Westfall, Trudi, *University of Iowa, Iowa City, IA*; Slusarski, Diane C., *Univ of Iowa Biology, Iowa City, IA*

110 **B53** **Regulation of Cadherin mediated F-actin assembly during Xenopus laevis embryogenesis.** Nandadasa, Sumeda, *Cincinnati Children's Hospital Medical Research Foundation, Cincinnati, OH*; Christopher, Wylie, *Cincinnati Children's Hospital Medical Research Foundation, Cincinnati, OH*

111 **B54** **Live imaging of cell movement in the developing cochlea confirms periods of convergence and extension.** Driver, Elizabeth C., *NIDCD/NIH Section on Developmental Neuroscience, Bethesda, MD*; Mann, Zoë, *NIDCD, NIH, Bethesda, MD*; Kelley, Matthew, *NIDCD, NIH, Bethesda, MD*

112 **B55** **Rac/JNK/dub regulates intercellular adhesive dynamics during gut morphogenesis.** Dush, Michael, *North Carolina State University, Raleigh, NC*; Nascone-Yoder, Nanette M., *North Carolina State University Molecular Biomedical Sciences, Raleigh, NC*

113 **B56** **Jaw joint morphogenesis requires Fat/Dachsous signaling in zebrafish.** Le Pabic, Pierre, *University of California, Irvine Developmental and Cell Biology, Irvine, CA*; Schilling, Thomas, *University of California, Irvine, Irvine, CA*

114 **B57** **Spatiotemporal regulation of cortical actomyosin dynamics during convergence and extension of the *Xenopus* embryo.** Kim, Hye Young, *University of Pittsburgh Bioengineering, Pittsburgh, PA*, Davidson, Lance, *University of Pittsburgh, Pittsburgh, PA*

115 **B58** **BMP7 directs epithelial cell fate choice and dorsal-ventral partitioning of the embryonic cloaca by collaborating with the PCP pathway.** Wu, Xinyu, *New York University School of Medicine, New York, NY*; Xu, Kun, *New York University School of Medicine, New York, NY*; Zhang, Lixia, *New York University School of Medicine, New York, NY*; Shapiro, Ellen, *New York University School of Medicine, New York, NY*; Li, Juan, *Jilin University, Changchun City, China*; Lepor, Herbert, *New York University School of Medicine, New York, NY*; Grishina, Irina, *New York University School of Medicine, New York, NY*

116 **B59** **A role for planar cell polarity during kidney tubule morphogenesis.** Bayly, Roy D., *Stanford University School of Medicine Pathology, Stanford, CA*; Axelrod, Jeff, *Stanford University School of Medicine, Stanford, CA*

117 **B60** **The BMP co-receptor Dragon is required for normal renal branching morphogenesis.** Xia, Yin, *The Chinese University of Hong Kong, N.T., Hong Kong*; Chen, Ying, *Massachusetts General Hospital, Boston, MA*; Lu, Hua, *Massachusetts General Hospital, Boston, MA*; Brown, Dennis, *Massachusetts General Hospital, Boston, MA*; Lin, Herbert, *Massachusetts General Hospital, Boston, MA*

118 **B61** **Identifying genes involved in ureteric bud morphogenesis.** Burn, Sally F., *Columbia University Genetics & Development, New York, NY*; Brunskill, Eric W., *Cincinnati, OH*; Potter, S. Steven, *Cincinnati, OH*; Lu, Benson C., *Columbia University Medical Center, New York, NY*; Wu, Zaiqi, *Columbia University Medical Center, New York, NY*; Costantini, Frank, *Columbia University Medical Center, New York, NY*

119 **B62** **Wnt4a and Wnt11r coordinate branching morphogenesis of endodermal pouch epithelia by controlling cell migration and junctional ALCAM localization.** Choe, Chong Pyo, *University of Southern Cali Stem Cell & Regenerative Med, Los Angeles, CA*; Matsutani, Megan, *University of Southern Cali Stem Cell & Regenerative Med, Los Angeles, CA*; Moens, Cecilia B., *Fred Hutchinson Cancer Research Center, Seattle, WA*; Crump, J. Gage, *University of Southern Cali Stem Cell & Regenerative Med, Los Angeles, CA*

120 **B63** **Modeling lung branching morphogenesis via epithelial-mesenchymal interaction.** Miura, Takashi, *Kyoto Univ, Grad School Med Dept of Anatomy & Dev Biol, Kyoto, Japan*; Kennichi, Hiraga, *Kyoto, Japan*; Hirashima, Tsuyoshi, *Kyoto University Graduate School of Medicine, Kyoto, Japan*

121 **B64** **Conditional embryonic over-expression of RAGE in the mouse lung diminishes pulmonary endothelium expression.** Geyer, Alex J, *Brigham Young University, Provo, UT*; Ferguson, Nick T, *Brigham Young University, Provo, UT*; Reynolds, Paul R, *Brigham Young University, Provo, UT*

122 B65 **Role of TGF-β inhibitory morphogen gradients in chick lung development.** Gleghorn, Jason P., *Princeton University Chemical & Biological Engineering, Princeton, NJ*; Kwak, Jiyong, *Princeton, NJ*; Pavlovich, Amira L., *Princeton, NJ*; Nelson, Celeste M., *Princeton, NJ*

123 B66 **Increased MMP-9 activity in mice that over-express RAGE in alveolar epithelium destabilizes the basement membrane by degrading collagen type IV.** Bukey, Benjamin R, *Brigham Young University, Provo, UT*; Porter, Jason L, *Brigham Young University, Provo, UT*; Hancock, Josh M, *Brigham Young University, Provo, UT*; Stogsdill, Jeffrey A, *Brigham Young University, Provo, UT*; Reynolds, Paul R, *Brigham Young University, Provo, UT*

124 B67 **Localization of CTGF in mouse embryonic mammary gland development.** Sambamurty, Anita, *St. Bonaventure University, St. Bonaventure, NY*; Kim, Alvin, *St. Bonaventure University, St. Bonaventure, NY*; Barkley, Tiffany, *St. Bonaventure University, St. Bonaventure, NY*; Hens, Julie R., *St. Bonaventure Univ Biology Dept, St. Bonaventure, NY*

125 B68 **Regulation and expression of CTGF during adult mammary gland morphogenesis.** Kim, Alvin, *St. Bonaventure, NY*; Sambamurty, Anita, *St. Bonaventure, NY*; Barkley, Tiffany, *St. Bonaventure, NY*; Hens, Julie, *St. Bonaventure, NY*

126 B69 **MiR-221 and miR-130 Regulate Hox Genes Controling Vascular Morphogenesis in Developing Lung.** Mujahid, Sana, *Tufts University Anatomy, Boston, MA*; Nielsen, Heber, *Boston, MA*; Volpe, MaryAnn, *Boston, MA*

127 B70 **Control of Lymphangiogenesis by Prox1.** Wang, Yingdi, *St. Jude Children's Research Hospital, Memphis, TN*; Lagutin, Oleg, *St. Jude Children's Research Hospital, Memphis, TN*; Oliver, Guillermo, *St. Jude Children's Research Hospital, Memphis, TN*

128 B71 **The Transcription Factor FoxO1 is Required in Endothelial Cells For Vascular Remodeling of the Mouse Yolk Sac.** Garcia, Monica D., *Baylor College of Medicine Molecular Physiology & Biophysics, Houston, TX*; Sills, Tiffany M., *Baylor College of Medicine, Houston, TX*; Udan, Ryan S., *Baylor College of Medicine, Houston, TX*; Vadakkan, Tegy J., *Baylor College of Medicine, Houston, TX*; DePinho, Ronald A., *Harvard Medical School, Boston, MA*; Hirschi, Karen K., *Baylor College of Medicine, Houston, TX*; Dickinson, Mary E., *Baylor College of Medicine, Houston, TX*

129 B72 **Interactions between vascular cells and neuron-glial cells in the developing central nervous system under hypoxia *in vitro*.** Rodriguez Celin, Alejandra, *Favaloro University Dept of Biostructural Sciences, Ciudad Autonoma de Buenos Aires, Argentina*; Rapacioli, Melina, *Favaloro University Dept of Biostructural Sciences, Ciudad Autonoma de Buenos Aires, Argentina*; Kuntz, Mélanie, *Laboratoire de Physiopathologie de la Barrière Hémato Encéphalique, Université d'Artois, Lens, France*; Dehouck, Lucie, *Laboratoire de Physiopathologie de la Barrière Hémato Encéphalique, Université d'Artois, Lens, France*; Bérézowski, Vincent, *Laboratoire de Physiopathologie de la Barrière Hémato Encéphalique, Université d'Artois, Lens, France*; Flores, Vladimir, *Favaloro University Dept of Biostructural Sciences, Ciudad Autonoma de Buenos Aires, Argentina*

130 B73 **Coordinated directional cell motility driving vertebrate limb bud morphogenesis.** Mao, Qiyan, *University of Chicago Cmte on Develop Biology, Chicago, IL*; Ho, Robert K., *Department of Organismal Biology and Anatomy, U. of Chicago, Chicago, IL*

131 B74 **Time-Lapse Confocal Analysis of Growth Plate Chondrocyte Column Formation.** Romereim, Sarah M., *Northwestern University Biochemistry Molec Biology & Cell Biology, Evanston, IL*

132 B75 **Functional Characterization of Limb-specific Enhancers in the Mouse.** Nolte, Mark J., *UT - MD Anderson Cancer Center Molecular Genetics, Houston, TX*; Behringer, Richard, *Houston, TX*

133 B76 **Ectodermal Inactivation of Smad4 Causes Limb Deformity.** Li, Jibiao, *Kent State University, Kent, OH*; Novak, Kimberly, *Kent State University, Macedonia, OH*

134 B77 **Expression of Dapper family members during mouse and chicken limb development.** Sensiate, Lucimara, *Campinas, Brazil*; Pedrosa, Angélica, *Campinas, Brazil*; Peterlini, Denner, *Campinas, Brazil*; da Veiga, Fernanda, *Campinas, Brazil*; Rirsch, Thaís, *Campinas, Brazil*; Dietrich, Suzanne, *London, UK*; Alvares, Lúcia, *Campinas, Brazil*

135 B78 **Neogenin regulates Shh pathway activity during digit patterning.** Hong, Mingi, *Mount Sinai School of Medicine Developmental & Regenerative Biology, New York, NY*; Schachter, Karen, *Mount Sinai School of Medicine, New York, NY*; Jiang, Guoying, *Mount Sinai School of Medicine, New York, NY*; Krauss, Robert, *Mount Sinai School of Medicine, New York, NY*

136 B79 **Dynamic regulation of Shh multimerization is required for Shh signaling *in vivo*.** Himmelstein, Diana, *Northwestern University, Chicago, IL*

137 ***Withdrawn***

424 B80 **The enhancer of trithorax and Polycomb Group gene Additional sex combs like 2 regulates mouse heart development.** Marion, Andrea L., *University of Illinois At Chicago Biological Sciences, Chicago, IL*; Lin, Annie, *Chicago, IL*; Patel, Mayur, *Chicago, IL*; Baskind, Heather, *Chicago, IL*; Wang, Qun-Tian, *Chicago, IL*

138 B81 **A new model of intestinal morphogenesis: the cell dynamics of epithelial remodeling and lumen expansion.** Grosse, Ann S., *University of Michigan Cell and Developmental Biology, Ann Arbor, MI*; Pressprich, Mark, *University of Michigan, Ann Arbor, MI*; Curley, Lauren, *University of Michigan, Ann Arbor, MI*; Margolis, Ben, *University of Michigan, Ann Arbor, MI*; Hildebrand, Jeffrey, *University of Pittsburgh, Pittsburgh, PA*; Gumucio, Deborah, *University of Michigan, Ann Arbor, MI*

139 B82 **Rho1 GTPase controls Drosophila salivary gland lumen size by regulating the distribution of cortical F-actin and phosphorylated Moesin.** Xu, Na, *Weill Medical College of Cornell University Cell & Developmental Biology, New York, NY*

140 B83 **Patched1 is essential for nasal pit invagination in mouse.** Metzis, Vicki, *The University of Queensland Institute for Molecular Bioscience, Brisbane, QLD, Australia*; Courtney, Andrew, *St Lucia, Brisbane, QLD, Australia*; Ferguson, Charles, *St Lucia, Brisbane, QLD, Australia*; Cooper, Ashley, *St Lucia, Brisbane, QLD, Australia*; Wainwright, Brandon, *St Lucia, Brisbane, QLD, Australia*; Wicking, Carol, *St Lucia, Brisbane, QLD, Australia*

141 B84 **V-ATPase-dependent ectodermal voltage and pH regionalization are required for *Xenopus* craniofacial morphogenesis.** Vandenberg, Laura, *The Center for Regenerative and Developmental Biology, Medford, MA*; Morrie, Ryan, *Tufts University, Medford, MA*; Adams, Dany, *Tufts University Dept of Biology, Medford, MA*

142 B85 **Serotonin 2B receptor signaling is required for craniofacial and ocular morphogenesis in *Xenopus*.** Ori, Michela, *University of Pisa, Pisa, Italy*; Reisoli, Elisa, *University of Pisa, Pisa, Italy*; Marras, Giulia, *University of Pisa, Pisa, Italy*; Nardi, Irma, *Dept. Biology, University of Pisa, Pisa, Italy*

143 B86 **Pharyngeal endoderm and FGF signaling in induction and patterning of the chick middle ear columella condensation.** Kumar, Megha, *Clemson University, Clemson, SC*; Ray, Poulomi, *Clemson University, Clemson, SC*; Chapman, Susan C., *Clemson University Biological Sciences, Clemson, SC*

144 **B87** **Mechanism of Mesenchymal Condensation during Chick Middle Ear Morphogenesis.** Ray, Poulomi, *Clemson University Dept of Biological Sciences, Clemson, SC*; Chapman, Susan, *Clemson University, Clemson, SC*

145 **B88** **Expression dynamics of PAR proteins during establishment of the chick lens placode.** Melo, Maraysa, *Universidade de São Paulo, São Paulo, Brazil*; Moraes Borges, Ricardo, *Universidade de Sao Paulo, São Paulo, Brazil*; Yan, Chao Yun Irene, *ICB-USP, Sao Paulo, Brazil*

146 **B89** **A TRIO-RhoA-Shroom3 pathway is required for apical constriction during lens pit invagination.** Plageman, Timothy F., *Cincinnati Children's Hospital Ophthalmology, Cincinnati, OH*; Chauhan, Bharesh, *Cincinnati, OH*; Jaudon, Fanny, *CRBM-CNRS, Montpellier, France*; Shang, Xun, *Cincinnati, OH*; Zheng, Yi, *Cincinnati, OH*; Lou, Ming, *Beaumont, TX*; Debant, Anne, *CRBM CNRS, Montpellier, France*; Lang, Richard, *Cincinnati Children's Hospital, Cincinnati, OH*

147 **B90** **Optic tectum morphogenesis: A step-by-step model based on the temporal–spatial organization of the neuroepithelial cell proliferation.** Rapacioli, Melina, *Buenos Aires, Argentina*; Duarte, Santiago, *Buenos Aires, Argentina*; Rodriguez Celin, Alejandra, *Buenos Aires, Argentina*; Fiore, Luciano, *Buenos Aires, Argentina;* Teruel, Luisa Renee, *Buenos Aires, Argentina*; Sanchez, Viviana, *Buenos Aires, Argentina*; Scicolone, Gabriel, *Buenos Aires, Argentina*; Flores, Vladimir, *Buenos Aires, Argentina*

148 **B91** **Retinal developmental defects in the barely started and good effort mutant zebrafish correlate with elevated cell death.** Bailey, Travis, *University of Notre Dame Dept of Biological Sciences, South Bend, IN*, Hyde, David, *Notre Dame*

149 **B92** **Role of Glycosaminoglycans in murine primary spinal neurulation.** Leong, Grace, *National University of Singapore, Singapore*

150 **B93** **MARCKS subcellular translocation during neural tube closure in the chick, and its modulation by PKC activity.** Aparicio, Gonzalo, *Facultad de Ciencias, Universidad de la Republica, Montevideo, Uruguay*; Folle, Maite, *Facultad de Ciencias, Universidad de la Republica, Montevideo, Uruguay*; Arruti, Cristina, *Facultad de Ciencias, Universidad de la Republica, Montevideo, Uruguay*; Zolessi, Flavio R., *Facultad de Ciencias, Universidad de la Republica Seccion Biologia Celular, Montevideo, Uruguay*

151 **B94** **The primary regulator of early embryonic brain growth in the chick: intraluminal pressure or FGF2?** Madern, Ashley L., *Villanova University Biology, Villanova, PA*; Desmond, Mary, *Villanova University, Villanova, PA*

152 **B95** **FAKs: Mechanotransducers in the Chick Embyonic Brain.** Desmond, Mary E., *Villanova University, Villanova, PA;* Knepper, Janice E., *Villanova University, Villanova, PA;* Callejo, Sagrario C., *Universidad de Valladolid, Valladolid, Spain*; Alonzo, Maria-Isabelle, *Universidad de Valladolid, Valladolid, Spain*; Gato, Angel, *Universidad de Valladolid, Valladolid, Spain*

153 **B96** **Temporal Analysis of FAK, Src, and ERK1/2 Signaling during Rapid Brain Growth of the Chick Embryo.** Malaugh, Elizabeth, *Villanova University, Villanova, PA*; Desmond, Mary E., *Villanova University, Villanova, PA*

154 **B97** **Essential roles of fibronectin in the development of the left-right embryonic body plan.** Pulina, Maria, *New York, NY*; Hou, Shuan, *Thomas Jefferson University, Philadelphia, PA*; Mittal, Ashok, *New York, NY*; Julich, Dorthe, *New Haven, CT*; Holley, Scott, *New Haven, CT*; Hynes, Richard, *Cambridge, MA*; Astrof, Sophie, *Thomas Jefferson University, Philadelphia, PA*

155 **B98** **Region-specific cell shape changes drive morphogenesis of the ciliated organ of asymmetry in zebrafish.** Wang, Guangliang, *SUNY Upstate Medical University, Syracuse, NY*; Amack, Jeffrey D., *State University of NY Upstate Med Univ. Cell & Developmental Biology, Syracuse, NY*

156 **B99** **Zebrafish placenta-specific 8.1 (plac8.1) is required for motile cilia morphogenesis and function.** Ma, Haiting, *Washington University in St. Louis, St. Louis, MO*; Li, Cunxi, *Vanderbilt University, Nashville, TN*; Coffey, Robert, *Vanderbilt University, Nashville, TN*; Solnica-Krezel, Lilianna, *Washington University in St. Louis, St. Louis, MO*

157 **B100** **Automated training and quantitative behavior analyses of molecularly-tractable model organisms.** Blackiston, Douglas, *Tufts University, Medford, MA*; Levin, Michael, *Medford, MA*

158 **B101** **Critical functions of myocardial Mycn in the developing mouse heart.** Harmelink, Cristina, *Birmingham, AL*; Jiao, Kai, *University of Alabama At Birmingham Genetics, Birmingham, AL*

159 **B102** **Not just inductive: a critical mechanical role for the endoderm during early cardiogenesis.** Varner, Victor D., *Washington University Biomedical Engineering, St Louis, MO*; Taber, Larry, *Washington University, Saint Louis, MO*

160 **B103** **The effects of simvastatin in zebrafish development.** Campos, Laise, *Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil*; Morris, Eduardo, *Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil*; Mermelstein, Claudia, *Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil*; Costa, Manoel Luis, *Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil*

161 **B104** **Effect of the lipid-raft disorganization on the muscular differentiation in zebrafish model.** Ríos, Eduardo, *UFRJ, Rio de Janeiro, Brazil*; Campos, Laise, *UFRJ, Rio de Janeiro, Brazil*; Mermelstein, Claudia, *UFRJ, Rio de Janeiro, Brazil*; Costa, Manoel Luis, *UFRJ, Rio de Janeiro, Brazi*

162 **B105** **Analysis of the long non-coding RNA, MHM, in avian embryonic development.** Roeszler, Kelly, *Murdoch Childrens Research Institute, Parkville, VIC, Australia*

163 **B106** **TCOF1 mutation affects the susceptibility to Hirschsprung's Disease.** Barlow, Amanda J., *Stowers Institute for Medical Research, Kansas City, MO*; Trainor, Paul, *Stowers Institute for Medical Research, Kansas City, MO*

164 **B107** **Fasciclins 2 and 3 (FAS2 and FAS3) participate in ommatidial patterning during eye development in Drosophila.** Villanueva, Zully, *New Mexico State University, Las Cruces, NM*; Garcia, Miriam, *New Mexico State University, Las Cruces, NM*; Curtiss, Jennifer, *New Mexico State University, Las Cruces, NM*

165 **B108** **Study of the action of calpains in the degradation of Cactus / IkappaB in the formation of muscles in embryos of Drosophila melanogaster and the fusion of myoblasts in Gallus gallus.** Buffolo, Márcio, *Rio de Janeiro, Brazil*; Carvalho, Bernardo, *Rio de Janeiro, Brazil*; Araujo, Helena, *Rio de Janeiro, Brazil*

166 **B109** **Characterization of GB73, a new gene involved in the polarized deposition of basement membrane components.** Devergne, Olivier, *HHMI/Princeton University, Princeton, NJ*; Denef, Natalie, *HHMI/Princeton University, Princeton, NJ*;Yan, Yan, *HHMI/Princeton University, Princeton, NJ*; Schupbach, Trudi, *HHMI/Princeton University, Princeton, NJ*

167 **B110** **Identification of an evolutionarily conserved regulatory element of the zebrafish collagen 2 alpha 1a gene.** Dale, Rodney, *Northwestern University Feinburg School of Medicine, Children's Memorial Research Center, Chicago, IL*; Topczewski, Jacek, *Northwestern University Feinburg School of Medicine, Children's Memorial Research Center, Chicago, IL*

168 **B111** **Nanoparticle effects on morphology in Danio rerio** Wall, Nancy, *Appleton, WI*; Mohrmann, Sarah, *George Washington University, Washington, DC*; Hall, David, *Appleton, WI*; Weinlander, Matt, *Appleton, WI*

169 **B112** **The search for mutant alleles affecting pharynx in the model organism: *C. elegans*.** Switaj, Lynn, *Lake Forest College Biology, Lake Forest, IL*; Szutenbach, Anneliese, *Lake Forest College, Lake Forest, IL*; Smith, Pliny, *Lake Forest College, Lake Forest, IL*

170 **B113** **Unbalance between cell proliferation and cell death induced by ultraviolet radiation on freshwater prawn morphogenesis.** Ammar, Dib, *Universidade federal de Santa Catarina, Florianopolis, Brazil*; Nazari, Evelise, *Universidade federal de Santa Catarina, Florianopolis, Brazil*; M Cardoso, Valquíria, *Universidade federal de Santa Catarina, Florianopolis, Brazil*; M R Muller, Yara, *Universidade federal de Santa Catarina, Florianopolis, Brazil*; Allodi, Silvana, *Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil*

Organogenesis

171 **B114** **The Nrf2/Keap1 pathway acts as an epidermal sentinel in utero to ensure the formation of a functional barrier.** Huebner, Aaron, *University of Colorado, Denver Cell Biology, Stem Cells & Development, Aurora, CO*; Schmidt, Ed, *Veterinary Molecular Biology, Bozeman, MT*; Werner, Sabine, *Swiss Federal Institute of Technology, Zurich, Switzerland*; Roop, Dennis, *Department of Dermatology and Charles C. Gates Center for Regenerative Medicine and Stem Cell Biology, Aurora, CO*

172 **B115** **How to skin a fish: the Zebrafish Integument Project and novel epidermal mutant wicked witch of the Midwest.** Westcot, Stephanie E., *Mayo Clinic Biochemistry and Molecular Biology, Rochester, MN*; Clark, Karl J., *Mayo Clinic, Rochester, Rochester, MN*; Skuster, Kimberly, *Mayo Clinic, Rochester, Rochester, MN*; Urban, Mark, *Mayo Clinic, Rochester, Rochester, MN*; Moulder, Gary, *Mayo Clinic, Rochester, Rochester, MN*; Greenwood, Tammy M., *Mayo Clinic, Rochester, Rochester, MN*; Balciunas, Darius, *Temple University, Philadelphia, PA*; Sivasubbu, Sridhar, *Institute of Genomics and Integrative Biology, Delhi, India*; Ekker, Stephen C., *Mayo Clinic, Rochester, Rochester, MN*

173 **B116** **Redundant functions of LIM-homeodomain transcription factors Lhx1 and Lhx5 on postnatal development of cerebellar Purkinje neurons in the mouse.** Tam, Wing Yip, *The Chinese University of Hong Kong Molecular Biotechnology Programme, Hong Kong, Hong Kong*; Behringer, Richard, *Department of Genetics, UT MD Anderson Cancer Center, Houston, TX*; Kwan, Kin Ming, *School of Life Sciences, The Chinese University of Hong Konhg, Shatin, Hong Kong*

174 **B117** **Cellular compartments and differential cell behaviors underlie formation of the distinct foliation pattern of the mouse cerebellum.** Legué, Emilie, *Memorial Sloan-Kettering Cancer Center, New York, NY*; Jaumouillé, Edouard, *Memorial Sloan-Kettering Cancer Center, New York, NY*; Sultan, Khadeejah, *Memorial Sloan-Kettering Cancer Center, New York, NY*; Espinosa, Sebastian, *Stanford University, Stanford, CA*; Barraza, Luis, *Memorial Sloan-Kettering Cancer Center, New York, NY*; Joyner, Alexandra, *Memorial Sloan-Kettering Cancer Center, New York, NY*

175 **B118** **ENU Mutagenesis Identifies Novel Genes Required For Forebrain Development.** Stottmann, Rolf W., *Brigham & Women's Hospital Medicine (Div. Genetics), Boston, MA*; Beier, David, *Brigham & Women's Hospital, Harvard Medical School, Boston, MA*

176 **B119** **Cranial vessel formation in the developing zebrafish.** Fujita, Misato, *NIH, Bethesda, MD*; Cha, Young, *NIH, Bethesda, MD*; Pham, Van, *NIH, Bethesda, MD*; Roman, Beth, *University of Pittsburgh, Pittsburgh, PA*; Weinstein, Brant, *NIH, Bethesda, MD*

177 **B120** **Ccm3 functions in a manner distinct from Ccm1 and 2 in a zebrafish model of CCM vascular disease.** Yoruk, Bilge, *University of Toronto Molecular Genetics, Toronto, ON, Canada*; Gillers, Benjamin S., *St. Louis, MO*; Scott, Ian C., *Toronto, ON, Canada*

178 **B121** **The antagonistic functions of the activator and repressor forms of Gli proteins underlie the dorsoventral patterning of the wild type and mutant spinal cords.** Liu, Aimin, *Penn State Univ Biology, University Park, PA*; Liu, Jinling, *University Park*; Heydeck, Westley, *University Park*; Ye, Xuan, *University Park*

179 **B122** **Hedgehog signaling is required for formation of the notochord sheath and patterning of nuclei pulposi within the intervertebral discs.** Choi, Kyung-Suk, *Univ of Florida Molecular Genetics & Microbiology, Gainsville, FL*; Harfe, Brian, *University of Florida, Gainesville, FL*

180 **B123** **Eye development in the box jellyfish *Carybdea marsupialis*.** Valley, Jenna, *Appalachian State University, Boone, NC*; Martin, Vicki, *Appalachian State University, Boone, NC*

181 **B124** **To see, or not to see: in the eye of Retinol and STRA6 signaling.** Ho, Lena, *Insitute of Medical Biology Human Embryology, Singapore*; Shboul, Mohammad, *Institute of Medical Biology, Singapore*; Reversade, Bruno, *Institue of Medical Biology, Singapore;* Shen, Kimberle, *Institute of Medical Biology, Singapore*; Masri, Amira, *Univ of Jordan, Amman*, Jordan; Merriman, Barry, *UCLA Geffen School of Medicine, Los Angeles, CA*

182 **B125** **Light as a regulator of vascular regression.** Rao, Sujata, *Cincinnati Childrens Hospital Opthalmology Developmental Biol, Cincinnati, OH*; Chun, Christina, *Departments of Ophthalmology and Physiology, San Francisco*; Hattar, Samer, *Johns Hopkins University, Baltimore*; Ferrara, Napoleone, *Genentech Inc, San Francisco*; Copenhagen, David, *Departments of Ophthalmology and Physiology, San Francisco*; Lang, Richard, *The Visual Systems Group, Divisions of Pediatric Ophthalmology and Developmental Biology, Cincinnati*

183 **B126** **The roles of mesenchymal Bmp4 in tooth development and successive tooth induction.** Jia, Shihai, *Center for Oral Biology and Department of Biomedical Genetics, University of Rochester School of Medicine and Dentistry*, *Rochester, NY*; Yang Gao, *Center for Oral Biology and Department of Biomedical Genetics, University of Rochester School of Medicine and Dentistry*, *Rochester, NY*; Jing Zhou, *Center for Oral Biology and Department of Biomedical Genetics, University of Rochester School of Medicine and Dentistry*, *Rochester, NY*; Jin-A Baek, *Center for Oral Biology and Department of Biomedical Genetics, University of Rochester School of Medicine and Dentistry*, *Rochester, NY*; Yu Lan, *Center for Oral Biology and Department of Biomedical Genetics, University of Rochester School of Medicine and Dentistry*, *Rochester, NY*; James F. Martin, *Alkek Institute of Biosciences and Technology, Texas A&M System Health Science Center, Houston, TX*; Jiang, Rulang, *Center for Oral Biology and Department of Biomedical Genetics, University of Rochester School of Medicine and Dentistry*, *Rochester, NY*

184 **B127** **Activation of Canonical Wnt Signaling in the Thymus Alters Epithelial Cell Identity.** Gordon, Julie, *Univ of Georgia Dept of Genetics, Athens, GA*; Manley, Nancy, *University of Georgia, Athens, GA*

185 **B128** **Role of enteric neurons and smooth muscle in development of zebrafish intestinal motility.** Kenneth, Wallace, *Clarkson University, Potsdam, NY*; Gillian, Roach, *C, Potsdam, NY*; Amy, Cameron, *Clarkson University, Potsdam, NY*

186 **B129** **Augmentation of Smad-dependent BMP signaling in cranial neural crests causes craniosynostosis in mice.** Komatsu, Yoshihiro, *School of Dentistry*, *University of Michigan*, *Ann Arbor*, *MI*; Yu, Paul, *Massachusetts General Hospital*, *Boston*, *MA*; Kamiya,

Nobuhiro, *School of Dentistry*, *University of Michigan*, *Ann Arbor*, *MI*; Mishina, Yuji, *School of Dentistry*, *University of Michigan*, *Ann Arbor*, *MI*

187 **B130** **HMGA2 is required in the neural crest cells of *Xenopus laevis*.** Macri', Simone, *University of Pisa, Pisa, Italy*; Onorati, Marco, *Università di Pisa, Pisa, Italy*; Sgarra, Riccardo, *Università di Trieste, Trieste, Italy*; Ros, Gloria, *Università di Trieste, Trieste, Italy*; Manfioletti, Guidalberto, *Università di Trieste, Trieste, Italy*; Vignali, Robert, *University of Pisa Dipartimento di Biologia, Laboratorio di Biologia Cellulare, Ghezzano, Italy*

188 **B131** **FGF-Ras-MAPK signaling drives apical constriction during zebrafish mechanosensory organ formation.** Harding, Molly J., *Oregon Health & Science University Neuroscience Graduate Program, Portland, OR*; Nechiporuk, Alex, *Oregon Health and Science University, Portland*

189 **B132** **Hox cofactor MEIS1 plays essential roles in pulmonary airway smooth muscle patterning.** Hines, Elizabeth, *University of Wisconsin-Madison Genetics, Madison, WI*; Yi, Lan, *Laboratory of Genetics University of Wisconsin-Madison, Madison, WI*; Sun, Xin, *Laboratory of Genetics University of Wisconsin-Madison, Madison, WI*

190 **B133** **A novel ENU-induced neonatal death mutant mouse: characterization and identification of responsible mutant gene.** Ho, Chun-Ta, *National Taiwan Univ., College of Med Pathology, Grad Institute of Pathology, Taipei, Taiwan*; Kung, John T, *Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan*; Huang, Pei-Hsin, *Graduate Institute of Pathology, College of Medicine, National Taiwan University, Taipei, Taiwan*

191 **B134** **Mesenchymal Nuclear factor I B regulates cell proliferation and epithelial differentiation during lung maturation.** Hsu, Yu-Chih, *University at Buffalo, Buffalo, NY*; Campbell, Christine, *University at Buffalo, Buffalo, NY*; Bachurski, Cindy, *Cincinnati Children's Hospital Research Foundation, Cincinnati, OH*; Litwack, E. David, *Office of Biorepositories and Biospecimen Research, Rockville, MD*; Osinski, Jason, *University at Buffalo, Buffalo, NY*; Wang, Dan, *Buffalo, NY*; Liu, Song, *Roswell Park Cancer Institute, Buffalo, NY*; Gronostajski, Richard M., *University At Buffalo (SUNY) Biochemistry, Buffalo, NY*

192 **B135** **Tbx4 and Tbx5 are important for lung growth and branching and tracheal/bronchial cartilage ring development.** Arora, Ripla, *Columbia Univ Genetics & Development, New York, NY*; Metzger, Ross, *University of California, San Francisco, San Francisco, CA*; Papaioannou, Virginia, *Columbia University, New York, NY*

193 **B136** **Hyperoxia Down-regulates Periostin Protein During a Critical Period of Lung Alveolar Development.** Ahlfeld, Shawn, *Indiana University School of Medicine, Indianapolis*; Conway, Simon, *Indiana University School of Medicine, Indianapolis, IN*

194 **B137** **Wntless promotes pulmonary differentiation and growth.** Sinner, Debora, *Cincinatti Children's Med Ctr Neonatology and Pulmonary Biology, Cincinnati, OH*; Cornett, Bridget, *Cincinnati, OH*; Lang, Richard, *Cincinnati, OH*; Whitsett, Jeffrey, *Cincinnati, OH*

195 **B138** **Cav3.2 regulation of Sox9 is necessary for the tracheal chondrogenesis.** Lin, Shinshue, *Taipei, Taiwan*; Campbell, Kevin P., *Iowa*; Chien-Chang, Chien-Chang, *Taipei, Taiwan*

196 **B139** **An O-glycosyltransferase is required for proper salivary gland development in Drosophila.** Tran, Duy, *Bethesda, MD*; Ten Hagen, Kelly, *Bethesda, MD*

197 **B140** **Kruppel-like factor 5 is required for formation and differentiation of the bladder urothelium.** Bell, Sheila M., *Children's Hospital Med Ctr Division of Neonatology, Cincinnati, OH*; Zhang, Liqian, *Cincinnati, OH*; Mendell, Angela, *Cincinnati, OH*; Xu, Yan, *Cincinnati, OH*; Lessard, James, *Cincinnati, OH*; Whitsett, Jeffrey, *Cincinnati, OH*

198 **B141** **Validation of a UchL1-H2Bcherrry:GFPgpi BAC transgenic for imaging of neuronal progenitors and innervation in the lower urinary tract.** Wiese, Carrie, *Vanderbilt University, Nashville, TN*; Fleming, Nicole, *Vanderbilt University, Nashville, TN*; Southard-Smith, Michelle, *Vanderbilt University, Nashville, TN*

199 **B142** **Balance of PI3K/mTOR Signaling Modulates Prostatic Branching Morphogenesis.** Ghosh, Susmita, *Johns Hopkins School of Medicine, Baltimore, MD*; Lau, Hiu, *Johns Hopkins School of Medicine, Baltimore*; Simons, Brian, *Baltimore*; Powell, Jonathan, *Baltimore*; Meyers, David, *Baltimore*; DeMarzo, Angelo, *Baltimore*; Berman, David, *Baltimore*; Lotan, Tamara L., *Johns Hopkins University Pathology, Baltimore, MD*

200 **B143** **Essential Roles of Androgen Signaling in Wolffian Duct Stabilization and Epididymal Cell Differentiation.** Murashima, Aki, *Kumamoto University, Kumamoto, Japan*; Miyagawa, Shinichi, *Kumamoto, Japan*; Ogino, Yukiko, *Kumamoto, Japan*; Nishida-Fukuda, Hisayo, *Ehime, Japan*; Araki, Kimi, *Kumamoto, Japan*; Matsumoto, Takahiro, *Tokushima, Japan*; Kaneko, Takehito, *Kyoto, Japan*; Yoshinaga, Kazuya, *Kumamoto, Japan*; Yamamura, Ken-ichi, *Kumamoto, Japan*; Kurita, Takeshi, *Chicago, IL*; Kato, Shigeaki, *Tokyo, Japan*; Moon, Anne, *Salt Lake City, UT*; Yamada, Gen, *Kumamoto, Japan*

201 **B144** **Sprouty Genes Are Required for Normal Urethral Formation in Mouse.** Ching, Saunders, *University of California, San Francisco, San Francisco, CA*; Schutzman, Jennifer, *San Francisco*; Cunha, Gerald, *San Francisco*; Baskin, Laurence, *San Francisco*; Klein, Ophir, *San Francisco*

202 **B145** **Genetic analysis of the hippo signaling pathway in mouse liver.** Lu, Li, *MD Anderson Cancer Center Biochemistry & Molecular Biology, Houston, TX*; Johnson, Randy, *MD Anderson Cancer Center, Houston, TX*

203 **B146** **Investigating the mechanism of liver vascular development and the role of Notch signaling in liver morphogenesis.** Walter, Teagan J., *Vanderbilt University Cell and Developmental Biology, Nashville, TN*; Huppert, Kari, *Vanderbilt University, Nashville, TN*; Huppert, Stacey, *Vanderbilt University Medical Center, Nashville, TN*

204 **B147** **Characterization of zeppelin, a novel zebrafish kidney mutant.** Schrader, Lauran, *Department of Biological Sciences, Notre Dame, IN*; Wingert, Rebecca A., *University of Notre Dame Department of Biological Sciences, Notre Dame, IN*

205 **B148** **Genetic analysis of nephron patterning in zebrafish.** Gerlach, Gary, *The University of Notre Dame, South Bend, IN*; Wingert, Rebecca, *The University of Notre Dame, South Bend, IN*

206 **B149** **The fate of Ret-expressing cells in the kidney and their role in maintaining renal branching morphogenesis.** Riccio, Paul N., *Columbia University Genetics and Development, New York, NY*; Enomoto, Hideki, *Riken Center for Developmental Biology, Kobe, Japan*; Costantini, Frank, *Columbia University, New York*

207 **B150** **Identification and Characterization of Etv4/5 Target Genes During Ureteric Bud Branching Morphogenesis.** Thowfeequ, Shifaan, *University of Columbia, New York*; Kuure, Satu, *University of Helsinki, Helsinki, Finland*; Lu, Benson, *Salk Institute, La Jolla*; Potter, Steven, *Children's Hospital Medical Center, Cincinnati, OH*; Costantini, Frank, *Columbia University, New York, NY*

208 **B151** **Role of Etv4 and Etv5 in pancreatic development.** Schmerr, Martin, *Cleveland Clinic, Cleveland, OH*; Kobberup, Sune, *Cleveland Clinic, Cleveland, OH*; Woo, Ngai, *Cleveland Clinic, Cleveland, OH*; Jensen, Jan, *Cleveland Clinic, Cleveland, OH*

209 **B152** **Hox6 genes are important niche factors that play critical roles in the proper formation and maintenance of the pancreas.** Hrycaj, Steven, *University of Michigan, Ann Arbor, MI*; Gong, Keqin, *University of Michigan, Ann Arbor, MI*; Wellik, Deneen, *University of Michigan, Ann Arbor, MI*

210 **B153** **Notch mediated patterning and cell fate allocation of pancreatic progenitor cells.** Afelik, Solomon, *Cleveland Clinic Lerner Research Institute Stem Cell & Regenerative Med, Cleveland, OH*; Qu, Xioling, *Lerner Research Institute, Cleveland Clinic Foundation, Cleveland, OH*; Hasrouni, Edy, *Lerner Research Institute, Cleveland Clinic Foundation, Cleveland, OH*; Bukys, Michael, *Lerner Research Institute, Cleveland Clinic Foundation, Cleveland, OH*; Niewoudt, Stephan, *Lerner Research Institute, Cleveland Clinic Foundation, Cleveland, OH*; Rogers, William, *Lerner Research Institute, Cleveland Clinic Foundation, Cleveland, OH*; Jensen, Jan, *Lerner Research Institute, Cleveland Clinic Foundation, Cleveland, OH*

211 **B154** **Loss of p120ctn in the pancreas results in expansion of ductal epithelium and loss of acinar cells.** Hendley, Audrey M., *Johns Hopkins University Human Genetics, Baltimore, MD*; Provost, Elayne, *Johns Hopkins University, Baltimore, MD*; Blake, Danielle, *Johns Hopkins University, Baltimore, MD*; Roeser, Jeffrey, *Johns Hopkins University, Baltimore, MD*; Reynolds, Albert, *Vanderbilt University Medical Center, Nashville, TN*; Leach, Steven, *Johns Hopkins University, Baltimore, MD*

212 **B155** **Claudin expression during pancreas development and in disease.** Westmoreland, Joby J., *St. Jude Childrens Hospital Genetics & Tumor, Cell Biology, Memphis, TN*; Yiannis, Drosos, *St. Jude Children's Research Hospital, Memphis, TN*; Jacquiline, Kelly, *St. Jude Children's Research Hospital, Memphis, TN*; Jianming, Ye, *St. Jude Children's Research Hospital, Memphis, TN*; Anna, Means, *Vanderbilt University Medical Center, Nashville, TN*; Kay, Washington, *Vanderbilt University Medical Center, Nashville, TN*; Beatriz, Sosa-Pineda, *St. Jude Children's Research Hospital, Memphis, TN*

213 **B156** **Canonical Wnt Signaling is Required to Pattern the Pancreatic Endoderm.** Kinkel, Mary, *University of Chicago Organismal Biol & Anat, Chicago, IL*; Prince, Victoria, *Chicago, IL*

214 **B157** **Identification and functional characterization of the zebrafish 2F11 antibody target protein.** Zhang, Danhua, *Sanford Burnham Medical Research Institute, San Diego, CA*

215 **B158** **Chemical screen identifies FDA approved drugs and target pathways that induce β-cell differentiation.** Rovira Clusellas, Meritxell, *Johns Hopkins University, Baltimore, MD*; Huang, Wei, *Johns Hopkins University, Baltimore, MD, USA*; Yusuff, Shamila, *Johns Hopkins University, Baltimore, MD*; Sup Shim, Joong, *Johns Hopkins University, Baltimore, MD*; Liu, Jun O., *Johns Hopkins University, Baltimore, MD*; Parsons, Michael J., *Johns Hopkins University, Baltimore, MD*

216 **B159** **A Wnt receptor, Frizzled 7, is essential for foregut organ formation.** Zhang, Zheng, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Rankin, Scott, *Cincinnati, OH*; Zorn, Aaron, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

217 **B160** **Wnt/β-catenin signaling in the early mammalian anterior foregut endoderm.** Redmond, Latasha, *Cincinnati Children's Hospital, Cincinnati, OH*; Spence, Jason, *Cincinnati Children's Hospital, Cincinnati, OH*; Zorn, Aaron, *Cincinnati Children's Hospital, Cincinnati, OH*; Wells, James, *Cincinnati Children's Hospital, Cincinnati, OH*

218 **B161** **Sizzled functions as an essential BMP feedback inhibitor that preserves foregut progenitor survival.** Rankin, Scott, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Prewitt, Allison, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Allbee, Andrew, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Zhang, Zheng, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Kenny, Alan P., *Cincinnati Children's Hosp Med Ctr Neonatology, Cincinnati, OH*; Shifley, Emily, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Zorn, Aaron, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

219 **B162** **Molecular Regulation of the Formation of the Phalanx Forming Region (PFR) at Autopod Stages of Limb Development.** Lancman, Joseph J., *Sanford Burnham Medical Research Institute, La Jolla, CA*; Suzuki, Takayuki, *Nagoya University, Nagoya, Japan*; Hasso, Sean M., *Children's Hospital Boston, Boston, MA*; Li, Yina, *Massachusetts General Hospital, Charlestown, MA*; Chiang, Chin, *Vanderbilt University Medical Center, Nashville, TN*; Fallon, John F., *Univ of Wisconsin-Madison Dept of Anatomy, Madison, WI*

220 **B163** **Using forward genetics to advance our understanding of mouse limb development.** Basch, Kasey, *Yale University, New Haven, CT*; Lee, Sunjin, *Yale University, New Haven, CT*; Mis, Emily, *Yale University, New Haven, CT*; Weatherbee, Scott D., *Yale University School of Medicine Genetics, New Haven, CT*

221 **B164** **Developmental basis of sexually dimorphic digit proportions (2D:4D ratio).** Zheng, Zhenui, *HHMI, Department of Molecular Genetics & Microbiology, University of Florida, Gainesville, FL*; Cohn, Martin, *HHMI, Department of Molecular Genetics & Microbiology, University of Florida, Gainesville, FL*

222 **B165** **Characterization of the mechanisms involved in the early specification and migration of Prox1-expressing lymphatic endothelial cells.** Yang, Ying, *St. Jude Children's Research Hospital, Memphis, TN*; Shen, Kimberle, *Institute of Medical Biology, Immunos, Singapore*; Srinivasan, Sathish, *St. Jude Children's Research Hospital, Memphis, TN*; Masri, Amira, *University of Jordan, Amman, Jordan*; Scallan, Joshua, *St. Jude Children's Research Hospital, Memphis, TN*; Oliver, Guillermo, *St. Jude Children's Research Hospital, Memphis, TN*; Merriman, Barry, *Los Angeles, CA*

223 **B166** **The cell adhesion molecule Cadm4 limits recruitment of late-differentiating cells into the cardiac outflow tract.** Zeng, Xin-Xin I., *University of California, San Diego Biological Sciences, La Jolla, CA*; Yelon, Deborah, *University of California, San Diego, La Jolla, CA*

224 **B167** **Mef2cb regulates late myocardial cell addition from a second heart field-like population of progenitors in zebrafish.** Lazic, Savo, *University of Toronto, Toronto, ON, Canada*; Scott, Ian, *University of Toronto, Toronto, ON, Canada*

225 **B168** **Regulation of nkx2.5 and mef2C by Hif-1alpha and Hdac9 during zebrafish cardiogenesis.** Juan, Ulloa, *Universida Andres Bello, Santiago, Chile*; Reyes, Ariel, *Universida Andres Bello, Santiago, Chile*

226 **B169** **Analysis of the pro-cardiac activity conferred by Gata5 and Smarcd3b in the zebrafish embryo.** Deshwar, Ashish R., *University of Toronto Molecular Genetics, Toronto, ON, Canada*; Lou, Xin, *The Hospital for Sick Children, Toronto, ON, Canada*; Scott, Ian C., *The Hospital for Sick Children, Toronto, ON, Canada*

227 **B170** **Etsrp / Etv2 Initiates Endothelial / Endocardial And Inhibits Myocardial Differentiation By Two Distinct Mechanisms In Zebrafish Embryos.** Palencia-Desai, Sharina, *Cincinnati Children's Hospital Medical Center, University of Cincinnati, Cincinnati, OH*; Kohli, Vikram, *Cincinnati, OH*; Kang, Jione, *San Franscisco, CA*; Chi, Neil C., *La Jolla, CA*; Black, Brian L., *San Franscisco, CA*; Sumanas, Saulius, *Cincinnati, OH*

228 **B171** **Zebrafish Mutant in Alpha-Cardiac Actin Serves As a Model For Dilated Cardiomyopathy.** Glenn, Nikki O., *Cincinnati Children's Hospital Developmental Biology, Cincinnati, OH*; Kohli, Vikram, *Cincinnati Children's Hospital, Cincinnati, OH*; Bartman, Thomas, *Cincinnati Children's Hospital, Cincinnati, OH*; Sumanas, Saulius, *Cincinnati Children's Hospital, Cincinnati, OH*

229 **B172** **Impaired heart function in embryos depleted for the voltage-gated calcium channel beta 2 subunit [CACNB2] is due to reduced cardiomyoctye proliferation and adhesion.** Garrity, Deborah M., *Colorado State Univ Biol, Fort Collins, CO*; Chernyavskaya, Yelena, *Colorado State University, Fort Collins, CO*; Ebert, Alicia, *Colorado State University, Fort Collins, CO, USA*; Milligan, Emily, *Colorado State University, Fort Collins, CO*

230 **B173** **Zebrafish as a model to study cardiomyopathy.** Glickman Holtzman, Nathalia S., *Queens College, CUNY Biology, New York, NY*; Corinna, Singleman, *Queens College, Flushing, NY*

231 **B174** **The chromatin remodeling complex subunit Baf60c regulates essential gene expression programs in heart development.** Sun, Xin, *Hospital for Sick Children, Toronto, ON, Canada*; Wylie, John, *Gladstone Institute of Cardiovascular Disease, San Francisco, CA*; Zhou, Yuqing, *Mouse Imaging Centre The Hospital for Sick Children Toronto Centre for Phenogenomics, Toronto, ON, Canada*; Christodoulou, Danos, *Harvard Medical School, Boston, MA*; Seidman, Christine E., *Department of Genetics Harvard Medical School, Boston, MA*; Seidman, Jonathan G, *Department of Genetics Harvard Medical School, Boston, MA*; Henkelman, Mark, *Mouse Imaging Centre Hospital for Sick Children Toronto Centre for Phenogenomics, Toronto, ON, Canada*; Rossant, Janet, *Hospital for Sick Children, Toronto, ON, Canada*; Bruneau, Benoit, *Gladstone Institute of Cardiovascular Disease, San Francisco, CA*

232 **B175** **Cardiac valve malformations: new insights from Pdlim7, an unexpected suspect in heart development.** Krcmery, Jennifer, *Norwestern Univ., Chicago, IL*; Sadleir, Rudyard, *Chicago*; Gupta, Rajesh, *Norwestern Univ., Chicago, IL*; Kamide, Chrissy, *Norwestern Univ., Chicago, IL*; Misener, Sol, *Norwestern Univ., Chicago, IL*; Losordo, Douglas, *Norwestern Univ., Chicago, IL*; Simon, Hans-Georg, *Norwestern Univ., Chicago, IL*

233 **B176** **Proteomic Analysis of Cardiovascular Development in the Ts65Dn Down Syndrome Mouse Model.** Moore, Clara S., *Franklin and Marshall College Biology, Lancaster,* PA; Kelly, Erik, *Franklin & Marshall College, Lancaster, PA*; Franca, Arianna, *Franklin & Marshall College, Lancaster, PA*

234 **B177** **Genomic Approaches to Understanding Atrial Septation.** Hoffmann, Andrew, *University of Chicago, Chicago, IL*; Bosman, Joshua, *University of Chicago, Chicago, IL*; Herriges, Michael, *University of Chicago, Chicago, IL*; Moskowitz, Ivan, *University of Chicago, Chicago, IL*

235 **B178** **Mbc, active Rac1 and F-actin foci localize to points of cell contact in fusion-competent myoblasts, where they drive fusion with founder cells and myotubes.** Haralalka, Shruti, *Stowers Institute Developmental Biology, Kansas City, MO*; Shelton, Claude, *Stowers Institute for Medical Research, Kansas City, MO*; Cartwright, Heather, *Stowers Institute for Medical Research, Kansas City, MO*; Abmayr, Susan, *Stowers Institute for Medical Research, Kansas City, MO*

236 **B179** **Mapping and phenotypic characterization of the dead elvis (del) mutation in zebrafish.** Carver, Ethan, *Univ of Tennessee At Chattanooga Biological & Environmental Sciences, Chattanooga, TN*; Milleville, Lauren, *UT Chattanooga, Chattanooga, TN*; Taylor, Michael, *St. Jude Children's Research Center, Memphis, TN*; Lessman, Charles, *University of Memphis, Memphis, TN*

237 **B180** **Elucidating the Circadian-Controlled Gene xNocturnin's Expression and Function in Somitogenesis.** Johnson, Nicole, *University of Wisconsin-Whitewater, Delavan, WI*; Curran, Kristen, *University of Wisconsin-Whitewater, Whitewater, WI*

238 **B181** **Reduced tendon differentiation in the *Irxl1* knockout mice.** Kimura, Wataru, *Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan*; Machii, Masashi, *Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan*; Sultana, Nishat, *Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan*; Hikosaka, Keisuke, *Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan*; Sharkar, Mohammad, *Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan*; Uezato, Tadayoshi, *Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan*; Koseki, Haruhiko, *RIKEN Center for Allergy and Immunology, Yokohama, Kanagawa, Japan*; Miura, Naoyuki, *Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan*

239 **B182** **Coordination of Growth Factor Signaling and Cell Death during Vertebrate Rib Development.** Fogel, Jennifer L., *University of Southern California Stem Cell & Regenerative Medicine, Los Angeles, CA*; Mariani, Francesca, *USC, Los Angeles,CA*

240 **B183** **Role of Syndecan-4 in mouse development.** Escobedo, Noelia, *Pontificia Universidad Catolica de Chile Cell and Molecular Biology, Santiago, Chile*; Farias, Marjorie, *Pontificia Universidad Catolica de Chile, Santiago, Chile*; Carrasco, Hector, *Pontificia Universidad Catolica de Chile, Santiago, Chile*; Contreras, Osvaldo, *Pontificia Universidad Catolica de Chile, Santiago, Chile*; Tran, Uyen, *Louisiana State University, New Orleans, LA*; Wessely, Oliver, *Louisiana State University, New Orleans, LA*; Copp, Andrew, *University College London, London, UK*; Larrain, Juan, *Pontificia Universidad Catolica de Chile, Santiago, Chile*

241 **B184** **Early embryonic development of freshwater prawns is impaired by ultraviolet radiation.** Nazari, Evelise M., *Universidade Federal de Santa Catarina Biologia Celular, Embriologia e Genetica, Florianopolis, Brazil*; Ammar, Dib, *UFSC-Universidade Federal de Santa Catarina, Florianopolis, Brazil*; Cardoso, Valquiria, *UFSC, Florianopolis, Brazil*; Muller, Yara, *UFSC, Florianopolis, Brazil*; Allodi, Silvana, *UFRJ, Rio de Janeiro, Brazil*

242 **B185** **3D Volumetric Ex-vivo Mouse Embryo Imaging and Image Registration using MRI, Micro-CT and Optical Projection Tomography.** Wong, Michael D, *Mouse Imaging Centre, Hospital for Sick Children, Toronto, ON, Canada*; Henkelman, R. Mark, *Mouse Imaging Centre, Hospital for Sick Children, Toronto, ON, Canada*

Poster and Exhibit Session II

Saturday, July 23, 12:30–3:30 PM *Riverside Center West*

Author presentation: Odd board numbers—12:30–2 PM
Even board numbers—2–3:30 PM

Set-up: July 22, 8–9 PM Tear down: Saturday, July 23, 5:30–6 PM

Poster themes: Cell Fate—Germ Cells and Gametogenesis—Cell Motility—Early Embryo Patterning—Stem Cells and Tissue Regeneration—Molecular Medicine and Development—Cell Proliferation—Functional Genomics

Cell fate specification

243 **B1** **Generation of Zebrafish Transgenic Lines to Study Centrosome Inheritance.** Willardsen, Minde I., *Medical College of Wisconsin Cell Bio, Neurobiol, Milwaukee, WI*; Link, Brian A., *Medical College of Wisconsin, Milwaukee, WI*

244 **B2** **Poky/Ikk1/Ikka promotes Ripk4 function in zebrafish epidermal differentiation.** Fukazawa, Cindy, *Rice University, Houston, TX*; Grzegowski, Steven, *Rice University, Houston, TX*; Shah-Simpson, Sheena, *Rice University, Houston, TX*; Wagner, Daniel S., *Rice University Biochem & Cell Biol, Houston, TX*

245 **B3** **FGF20 is required for differentiation of cochlear outer hair cells and normal hearing function.** Huh, Sung-Ho, *Washington Univ Developmental Biology, St. Louis, MO*; Jones, Jennifer, *Washington Univ Developmental Biology, St. Louis, MO*; Warchol, Mark, *Washington Univ Developmental Biology, St. Louis, MO*; Ornitz, David, *Washington Univ Developmental Biology, St. Louis, MO*

246 **B4** **The Role of Hes/Hey Genes in the Sensory Development of the Chicken Inner Ear.** Petrovic, Jelena, *CEXS-UPF, Barcelona, Spain*; Neves, Joana, *CEXS-UPF, Barcelona, Spain*; Giraldez, Fernando, *CEXS-UPF, Barcelona, Spain*

247 **B5** **Sox2 and Ngn1 regulate the neurogenic fate in the developing inner ear.** Evsen, Lale, *NIDCD/NIH, College Park, MD*; Uchikawa, Masanori, *Graduate School of Frontier Bioscience, Osaka, Japan*; Sugahara, Satoko, *Graduate School of Frontier Bioscience, Osaka, Japan*; Kondoh, Hisato, *Graduate School of Frontier Bioscience, Osaka, Japan*; Wu, Doris, *National Institute on Deafness and Other Communication Disorders, Rockville, MD*

248 **B6** **Fate-Mapping the Vestibular Neurogenic Region in the Developing Chicken Otic Cup Using Lipophilic Dyes.** Deng, Xiaohong, *NIDCD/NIH Laboratory of Molecular Biology, Rockville, MD*; Wu, Doris, *NIDCD/NIH, Rockville, MD*

249 **B7** **The Role of Hh Signaling and Proneural Genes in Otic Neurosensory Development.** Pujades, Cristina, *Universitat Pompeu Fabra, Barcelona, Spain*; Sapede, Dora, *Universitat Pompeu Fabra, Barcelona, Spain*; Dyballa, Sylvia, *Universitat Pompeu Fabra, Barcelona, Spain*

250 **B8** **Exploring the function of hair-cell-enriched microRNAs in vitro and in vivo.** Stoller, Michelle, *Purdue University, West Lafayette, IN*; Zhang, Kaidi, *Purdue University, West Lafayette, IN*; Fekete, Donna, *Purdue University, West Lafayette, IN*

251 **B9** **Specification of Sensory Progenitors: towards a Gene Regulatory Network.** Tambalo, Monica, *King's College London, London, UK*; Grocott, Timothy, *King's College London, London, UK*; Streit, Andrea, *King's College London, London, UK*

252 **B10** **The role of the zinc-finger transcription factor Sp8 in the establishment/maintenance of the dorsal lateral ganglionic eminence (dLGE).** Madhavan, Mayur, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Ilya, Vilinsky, *University of Cincinnati, Cincinnati, OH*; Ehrman, Lisa, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Campbell, Kenneth, *Cincinnati Children's Hospital Medical Center, Cincinnati,OH*

253 **B11** **GABAergic Differentiation in the Basal Ganglia Requires Retinoic Acid Signalling.** Chatzi, Christina, *Sanford-Burnham Med Research Institute Development and Aging, La Jolla, CA*; Brade, Thomas, *Sanford Burnham, La Jolla, CA*; Duester, Gregg, *Sanford Burnham, La Jolla, CA*

254 **B12** **MicroRNAs in Dopamine progenitor specification.** Anderegg, Angela, *Chicago, IL*; Lin, Hsin Pin, *Northwestern, Chicago*; Yun, Beth, *Chicago*; Harfe, Brian, *University of Florida, Gainesville, FL*; Johnson, Randy, *University of Texas, Houston, TX*; Awatramani, Raj B., *Northwestern Univ. Neurology, Chicago, IL*

255 **B13** **A Genetic Modifier Screen of midline to Identify Candidate Enhancer and Suppressor Genes that Regulate Interommatidial Bristle Formation in the Adult Drosophila Eye.** Kumar, Deepak, *University of Southern Mississippi, Hattiesburg, MS*; Leal, Sandra, *University of Southern Mississippi, Hattiesburg, MS*

256 **B14** **The polycomb repressive complex PRC2 regulates retinal differentiation in Xenopus.** Aldiri, Issam, *University of Utah Neurobiology & Anatomy, Salt Lake City, UT*; Veenstra, Gert Jan C, *Radboud University Nijmegen, Nijmegen, Netherlands*; Vetter, Monica, *University of Utah, Salt Lake City, UT*

257 **B15** **The Proneural Target Gene Sbt1 Regulates Neurogenesis in the Xenopus Retina.** Moore, Kathryn B., *University of Utah Dept of Neurobiology & Anatomy, Salt Lake City, UT*; Logan, Mary, *Jungers Center for Neurosciences Research Department of Neurology, Porland, OR*; Al Diri, Issam, *University of Utah, Salt Lake City, UT*; Bunch, Derek, *University of Utah, Salt Lake City, UT*; Vetter, Monica, *Salt Lake City, UT*

258 **B16** **Loss of Llgl1 results in neuroepithelial apical domain expansion, increased Notch activity and reduced neurogenesis in the zebrafish retina.** Clark, Brian, *Medical College of Wisconsin Cell Biol, Neurobiol, & Anatomy, Milwaukee, WI*; Cui, Shuang, *Milwaukee*; Miesfeld, Joel B., *Milwaukee*; Link, Brian A., *Milwaukee*

259 **B17** **The Role of Gsx2 in the Choice between Neuronal versus Oligodendroglial Fates.** Chapman, Heather, *Cincinnati, OH*; Pei, Zhenglei, *Cincinnati, OH*; Waclaw, Ronald, *Cincinnati, OH*; Nakafuku, Masato, *Cincinnati, OH*; Campbell, Kenneth, *Cincinnati, OH*

260 **B18** **The protein tyrosine phosphatase Shp2 is required for oligodendrogenesis in the telencephalon.** Waclaw, Ronald, *Cincinnati Children's Hospital Med Ctr Exp. Hematology & Cancer Biology, Cincinnati, OH*; Nardini, Diana, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Ehrman, Lisa, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Ehrman, Sarah, *Cincinnati, OH*; Rizvi, Tilat, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Robbins, Jeffrey, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Nakafuku, Masato, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

261 **B19** **Regulation of Intermediate Progenitor Cells in Developing Cerebral Cortex by Retinoic Acid Receptor alpha Signaling.** Liu, Chia-Wei, *National Yang-Ming University, Taipei, Taiwan*; Wang, Hsiao-Fang, *National Yang-Ming University, Taipei, Taiwan*; Chambon, Pierre, *Institut de Genetique et de Biologie Moleculaire et Cellulaire (IGBMC), Strasbourg, Taiwan*; Liu, Fu-Chin, *National Yang-Ming University, Taipei, Taiwan*

262 **B20** **Temporal and Spatial Controls of Cell Fate Specification in the Cerebellar Rhombic Lip Precursor Pool.** Green, Mary, *King's College London, London, UK*; Wingate, Richard, *King's College London, London, UK*

263 **B21** **The Effects of Maternal Alcohol Exposure on the Development of the Precerebellar System.** Worrell, Leslie, *Springfield, IL*; Oyler, Kelli, *University of Illinois Springfield, Springfield, IL*; Landsberg, Rebecca L., *University of Illinois Springfield Biology, Springfield, IL*

264 **B22** **Subnuclear development of the zebrafish habenular nuclei requires ER translocon function.** Doll, Caleb A., *Vanderbilt University Biological Sciences, Nashville, TN*

265 **B23** **Excessive Wnt/beta-catenin signaling promotes neurogenesis in the spinal cord, hindbrain, and midbrain floor plate, but results in vacillating dopamine progenitors.** Joksimovic, Milan, *Northwestern University Neurology, Chicago, IL*; Anderegg, Angela, *Chicago, IL*; Poulin, Jean-Francois, *Chicago, IL*; Taketo, Makoto, *Graduate School of Medicine, Kyoto University, Kyoto, Japan*; Johnson, Randy, *University of Texas, Houston, TX*; Awatramani, Rajeshwar, *Northwestern University, Chicago, IL*

266 **B24** **The role of Pamitoyl Protein Thioesterase 2 in the development of the embryonic nervous system in Drosophila.** Chu-LaGraff, Quynh, *Union College, Schenectady, NY*; O'Hern, Patrick, *Union College, Schenectady, NY*

267 **B25** **Characterization of aaquetzalli (aqz), a gene required for development of the nervous system during Drosophila melanogaster embryogenesis.** Mendoza, Miguel A., *Instituto de Neurobiologia, UNAM Neurobiologia del Desarrollo, Queretaro, Mexico*

268 **B26** **Neural crest and ectodermal contributions to the development of the nasal placode.** Forni, Paolo Emanuele, *NIH Cellular and Developmental Neurobiology Section NINDS, Bethesda, MD*; Taylor-Burds, Carlor, *CDNS/NINDS/NIH, Bethedsa, MD*; Senkus Melvin, Vida, *Dept. of Craniofacial Biology and Dept. of Cell and Developmental Biology, Denver, CO*; Williams, Trevor, *Dept. of Craniofacial Biology and Dept. of Cell and Developmental Biology, Denver, CO*; Wray, Susan, *CDNS/NINDS/NIH, Bethesda, MD*

269 **B27** **A Bmp-Id2a-Twist1-Fli1a network specifies ectomesenchyme from cranial neural crest.** Ankita, Das, *University of Southern California, Los Angeles, CA*

270 **B28** **Understanding neural crest cell development using Gcnf−/− mutant mice as a model system.** Achilleos, Annita, *Stowers Institute, Kansas City, MO*; Crane, Jennie, *Stowers Institute, Kansas City, MO*; Bhatt, Shachi, *Stowers Institute, Kansas City, MO*; Trainor, Paul, *Stowers Institute, Kansas City, MO*

271 **B29** **Characterization of downstream targets of Pax3 and Zic1 in the developing neural crest.** Hong, Chang-Soo, *Daegu University, Gyeongbuk, Korea, Republic of*; Saint-Jeannet, Jean-Pierre, *University of Pennsylvania, Philadelphia, PA*

272 **B30** **Cell cycle control of NOTCH signalling during C. elegans vulval development.** Nusser-Stein, Stephanie, *University of Zurich Institute of Molecular Life Sciences, Zurich, Switzerland*; Adamczyk, Magdalene, *University of Zurich, Zurich, Switzerland*; Beyer, Antje, *Microsoft Research Cambridge, Cambridge, UK*; Rimann, Ivo, *Scripps Research Institute, La Jolla, CA*; Piterman, Nir, *University of Leicester, Leicester, UK*; Fisher, Jasmin, *Microsoft Research Cambridge, Cambridge, UK*; Hajnal, Alex, *University of Zurich, Zurich, Switzerland*

273 **B31** **Cooperative Activity of Nogin and Gremlin in the Development of the Axial Skeleton.** Stafford, David A., *UC Berkeley, Berkeley, CA*; Brunet, Lisa, *Department of Molecular & Cell Biology, Berkeley, CA*; Harland, Richard, *Berkeley, CA*

274 **B32** **Retinoic Acid Signaling Preferentially Activates Pod1 and WT1 Expression and Inhibits Smooth Muscle Differentiation in Epicardium-derived Cells.** Braitsch, Caitlin M., *Cincinnati Children's Hospital Med Ctr Molecular Cardiovascular Biology, Cincinnati, OH*; Combs, Michelle, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Yutzey, Katherine, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

275 **B33** **Notch input to blood stem cell programming during Xenopus ontogeny.** Stephenson, Rachel A., *University of Oxford Molecular Haematology Unit Weatherall Instit of Molec Med, Headington, UK*; Ciau-Uitz, Aldo, *University of Oxford, Oxford, UK*; Patient, Roger, *University of Oxford, Oxford, UK*

276 **B34** **els1, an evolutionarily conserved and functionally uncharacterized gene, is required for zebrafish embryonic hematopoiesis.** Huang, Cheng, *Chicago, IL*; Mueller, Rachel, *Fort Collins, CO*; Ho, Robert, *Chicago, IL*

277 **B35** **Effect of Wnt Signaling on the Formation of Embryonic Blood Cells in zebrafish.** Kim, Mijin, *Univ. of Chicago Organismal Biology & Anatomy, Chicago, IL*; Ho, Robert, *The University of Chicago, Chicago, IL*

278 **B36** **Origin Of Arterial And Venous Endothelial Progenitors In Zebrafish.** Kohli, Vikram, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Proulx, Kira, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Sumanas, Saulius, *Cincinnati Children's Hospital Med Center Div of Developmental Biology, Cincinnati, OH*

279 **B37** **The Aplnr GPCR signals independently of Gai/o proteins and cell-non-autonomously in the development of myocardial progenitor cells.** Paskaradevan, Sivani, *Univ of Toronto Molecular Genetics, Toronto, ON, Canada*; Ian, Scott, *The Hospital for Sick Children, Toronto, ON, Canada*

280 **B38** **Cardiac BAF complex promotes heart progenitor differentiation and migration in the zebrafish embryo.** Lou, Xin, *Hospital for Sick Children, Toronto, ON, Canada*; Scott, Ian, *Hospital for Sick Children, Toronto, ON, Canada*

281 **B39** **Genetic inducible fate mapping of Notch responsive cells in zebrafish heart.** Huang, Wei, *Johns Hopkins University, Baltimore, MD*; Parsons, Michael, *Johns Hopkins University, Baltimore, MD*

282 **B40** **Investigating an interchangeable potential between heart and gut mesothelial development.** Thomason, Rebecca T., *Vanderbilt University Cell and Developmental Biology, Nashville, TN*282—- Winters, Niki, *Vanderbilt University, Nashville, TN*; Cross, Emily, *Vanderbilt University, Nashville, TN*; Bader, David, *Vanderbilt University, Nashville, TN*

283 **B41** **The role of β-catenin and Eomesodermin in the establishment of progenitor and stem cell lineages during intestinal endodermal development.** Graca Da Silva, Rita, *The Hospital for Sick Children Developmental & Stem Cell Biology, Toronto, ON, Canada*; Rossant, Janet, *Hospital for Sick Children/Department of Molecular Genetics, University of Toronto, Toronto, ON, Canada*

284 **B42** **Zebrafish mnx1 Controls Cell Fate Choice in the Developing Endocrine Pancreas.** Dalgin, Gokhan, *The University of Chicago Organismal Biology & Anatomy, Chicago, IL*; Ward, Andrea B, *Garden City, NY*; Hao, Le T, *Columbus, OH*; Beattie, Christine E, *Columbus, OH*; Nechiporuk, Alexei, *Portland, OR*; Prince, Victoria E, *Chicago, IL*

285 **B43** **Mechanism of Genetic Interaction between Hnf1b and Wnt/β-Catenin Signaling for Specification of Hepatopancreatic Progenitors.** Lancman, Joseph J., *Sanford Burnham Medical Research Institute, La Jolla, CA*; Zhang, Danhua, *Sanford Burnham Medical Research Institute, La Jolla, CA*; Gates, Keith, *Sanford Burnham Medical Research Institute, La Jolla, CA*; Stainier, Didier Y.R., *University of California, San Francisco, San Francisco, CA*; Dong, P. Duc, *Sanford Burnham Medical Research Institute, La Jolla, CA*

286 **B44** **Grg3 Corepressor is Required for the Differentiation of Secondary Transition Endocrine Cells in the Embryonic Pancreas.** Metzger, David, *Cell and Developmental Biology, University of Pennsylvania, Philadelphia, PA*; Gasperowicz, Malgorzata, *Department of Comparative Biology and Experimental Medicine, Faculty of Veterinary Medicine, University of Calgary, Calgary, AB, Canada*; Otto, Florian, *Tumorzentrum ZeTuP, Center for Tumor Detection, Treatment and Prevention, St. Gallen, Switzerland*; Cross, James, *Department of Comparative Biology and Experimental Medicine, Faculty of Veterinary Medicine, University of Calgary, Calgary, AB, Canada*; Zaret, Ken, *Cell and Developmental Biology, University of Pennsylvania, Philadelphia, PA*

287 **B45** **A combined role for Nkx2.2 and Arx in endocrine cell specification during embryonic pancreas development.** Mastracci, Teresa L., *Columbia University Genetics and Development, New York, NY*; Panea, Casandra, *Columbia University, New York*; Golden, Jeffery, *University of Pennsylvania, Philadelphia*; May, Catherine Lee, *University of Pennsylvania, Philadelphia*; Sussel, Lori, *Columbia University, New York*

Germ Cells and Gametogenesis

288 **B46** **Atypical Protein Kinase C is a specific marker for primitive endoderm in the mouse blastocyst.** Saiz, Nestor, *The University of Manchester Faculty of Life Sciences, Manchester, UK*; Grabarek, Joanna B, *Faculty of Life Sciences, The University of Manchester, Manchester, UK*; Plusa, Berenika, *Faculty of Life Sciences, The University of Manchester, Manchester, UK*

289 **B47** **Chemical Control of Protein Stability in C. elegans.** Verheyden, Jamie M., *University of Wisconsin-Madison Department of Biochemistry, Madison, WI*; Byrd, Dana T, *Madison, WI*; Kimble, Judith, *HHMI and University of Wisconsin-Madison, Madison, WI*

290 **B48** **Germ granules extend the nuclear pore complex environment in the C. elegans germ line.** Updike, Dustin L., *University of California Santa Cruz Molecular Cell & Developmental Biology, Santa Cruz, CA*; Strome, Susan, *UC Santa Cruz, Santa Cruz, CA*

291 **B49** **Characterizing Blimp1 expression and PGC migration in M. domestica.** Chen, Justin, *Oberlin College Biology Department, West Windsor, NJ*

292 **B50** **A Molecular Dynamics Study on the Tre1 G Protein-Coupled Receptor.** Pruitt, Margaret M., *Iowa State University, Ames, IA*; Lamm, Monica H., *Iowa State University, Ames, IA*; Coffman, Clark R., *Iowa State Univ Genet Devel & Cell Biol, Ames, IA*

293 **B51** **A crucial role for lipid phosphorylation in WntD-mediated primordial germ cell migration.** McElwain, Mark A., *Stanford University Developmental Biology, Stanford, CA*; Ko, Dennis C., *Stanford University Developmental Biology, Stanford, CA*; Gordon, Michael D., *Stanford University Developmental Biology, Stanford, CA*; Nusse, Roeland, *Stanford, CA*

294 **B52** **Xenopus Nanos1 Is Required to Preserve PGCs from Endoderm Specification.** Lai, Fangfang, *University of Miami Miller School of Medicine, Miami, FL*; Singh, Amar, *The University of Georgia, Athens, GA*; King, Mary Lou, *University of Miami Miller School of Medicine, Miami, FL*

295 **B53** **Oskar predates the evolution of insect germ plasm.** Ewen-Campen, Benjamin S., *Harvard University Organismic and Evolutionary Biology, Cambridge, MA*; Srouji, John, *Cambridge, MA*; Schwager, Evelyn, *Cambridge, MA*; Extavour, Cassandra, *Harvard University, Cambridge, MA*

296 **B54** **Ultrastructure of Putative Germ Plasm in Penaeid Shrimp.** Grattan, Rachel, *Central Michigan University, Mount Pleasant, MI*; Hertzler, Philip L., *Central Michigan Univ Dept of Biol, Mount Pleasant, MI*

297 **B55** **Localization of the Vasa homolog and formation of germ granules during oogenesis of the sea urchin Strongylocentrotus intermedius.** Yakovlev, Konstantin V., *A.V. Zhirmunsky Institute of Marine Biology, FEB RAS Cytotechnology, Vladivostok, Russian Federation*

298 **B56** ***Cyp26b1*** **regulates sex-specific timing of meiotic initiation independent of retinoic acid.** Kumar, Sandeep, *Sanford-Burnham Med Research Institute Development and Aging, La Jolla, CA*; Chatzi, Christina, *Sanford-Burnham Medical Research Institute, La Jolla, CA*; Brade, Thomas, *Sanford-Burnham Medical Research Institute, La Jolla*; Cunningham, Thomas, *Sanford-Burnham Medical Research Institute, La Jolla*; Zhao, Xianling, *Sanford-Burnham Medical Research Institute, La Jolla*; Duester, Gregg, *Sanford-Burnham Medical Research Institute, La Jolla*

299 **B57** **The Role of Geminin in Germinal Stem Cells.** Schultz, Katie, *Chicago, IL*; McGarry, Thomas, *Chicago, IL*; Barry, Kelly, *Northwestern University, Chicago, IL*

300 **B58** **Fatty acyl-CoA synthetase and meiotic cell cycle regulation.** Wang, Huawei, *Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, Beijing, China*

301 **B59** **Characterization of Innexin 4 and 7 genes in ovarian development of Rhynchosciara Americana.** Bazán Palomino, Natalia, *São Paulo, Brazil*; Rezende-Teixeira, Paula, *Sao Paulo, Brazil*; Machado-Santelli, Glaucia Maria, *Sao Paulo, Brazil*

302 **B60** **AMS function during late pollen meiosis and subsequent pollen wall formation.** Ferjentsikova, Ivana, *University of Nottingham Plant Science, Nottingham, UK*; Wilson, Zoe, *University of Nottingham Plant Science, Nottingham, UK*

303 **B61** **Microarray analyses and morphological studies to characterize the differences between sexual and asexual planarians.** Chong, Tracy, *Univ of Illinois Urbana-Champaign Cell and Developmental Biology, Urbana, IL*; Stary, Joel, *Neuroscience Program, University of Illinois at Urbana-Champaign, Urbana, IL*; Wang, Yuying, *Department of Cell and Developmental Biology, University of Illinois at Urbana-Champaign, Urbana, IL*; Newmark, Phillip, *Department of Cell and Developmental Biology, Howard Hughes Medical Institute, University of Illinois at Urbana-Champaign, Urbana, IL*

304 **B62** **Relation Between Type 2 Diabetes Mellitus (DM) and Telomere Length of Rat's Sperm - According to Age.** Park, Cheol Ho, *Gachon University of Medicine and Science, Incheon, Republic of Korea*; *Gachon University of Medicine and Science, Incheon, Republic of Korea*; Kim, Ji Sun, *Gachon University of Medicine and Science, Incheon, Republic of Korea*; Yoon, Jae Hee, *Gachon University, Incheon, Republic of Korea*; Hwang, You Jin, *Gachon University, Incheon, Republic of Korea*; Kim, Dae Young, *Gachon University, Incheon, Republic of Korea*

305 **B63** **Influence of Antifreeze Proteins on Boar Sperm DNA Damaging during Cryopreservation.** Kim, Ji Sun, *Gachon University of Medicine and Science, Incheon, Republic of Korea*; Yoon, Jae Hee, *Gachon University, Incheon, Republic of Korea*; Park, Gun Hyun, *Gachon University, Incheon, Republic of Korea*; Bae, Sung Hun, *Gachon University, Incheon, Republic of Korea*; Kim, Hak Jun, *Korea Polar Research Institute (KOPRI), Incheon, Republic of Korea*; Kim, Min Su, *Chonbuk National University, Jeonju-si, Jeonbuk, Republic of Korea*; Hwang, You Jin, *Gachon University, Incheon, Republic of Korea*; Kim, Dae Young, *Gachon University, Incheon, Republic of Korea*

306 **B64** **Antioxidant effect of Erythritol on boar spermatozoa during cryopreservation.** Kim, Sung Won, *Gachon University, Incheon, Republic of Korea*; Park, Cheol Ho, *Gachon University, Incheon, Republic of Korea*; Kim, Ji Sun, *Gachon University, Incheon, Republic of Korea*; Yoon, Jae Hee, *Gachon University, Incheon, Republic of Korea*; Hwang, You Jin, *Gachon University, Incheon, Republic of Korea*; Kim, Dae Young, *Gachon University, Incheon, Republic of Korea*

Cell Motility and Guidance

307 **B65** **The methyltransferase NSD3 regulates neural crest development.** Jacques-Fricke, Bridget, *University of Minnesota Genetics, Cell Biology and Development, Minneapolis, MN*; Gammill, Laura S., *University of Minnesota Genetics, Cell Biology and Development, Minneapolis, MN*

308 **B66** **What are methylated proteins doing in the cytoplasm of migratory neural crest cells?** Vermillion, Katie, *University of Minnesota, Department of Genetics, Cell Biology and Development, Minneapolis, MN*; Gammill, Laura S., *University of Minnesota, Department of Genetics, Cell Biology and Development, Minneapolis, MN*

309 **B67** **The putative phosphatase, paladin, regulates neural crest development.** Roffers-Agarwal, Julaine, *University of Minnesota, Minneapolis, MN*; Hutt, Karla J., *University of Minnesota, Minneapolis, MN*; Gammill, Laura S., *University of Minnesota, Minneapolis, MN*

310 **B68** **Proliferation Dynamics Associated with Cranial Neural Crest Cell Migration.** Ridenour, Dennis A., *Stowers Institute for Medical Research, Kansas City, MO*; McLennan, Rebecca, *Stowers Institute for Medical Research, Kansas City, MO*; Teddy, Jessica M., *Stowers Institute for Medical Research, Kansas City, MO*; Prather, Katherine W., *Stowers Institute for Medical Research, Kansas City, MO*; Semerad, Craig L., *Stowers Institute for Medical Research, Kansas City, MO*; Haug, Jeff, *Stowers Institute for Medical Research, Kansas City, MO*; Kulesa, Paul M., *Stowers Institute for Medical Research, Kansas City, MO*

311 **B69** **Lead and trailing cranial neural crest cells display distinct cellular and molecular profiles in response to surrounding microenvironments during migration.** Kulesa, Paul M., *Stowers Institute for Medical Research, Kansas City, MO*; Prather, Katherine W., *Stowers Institute for Medical Research, Kansas City, MO*; Morrison, Jason M., *Stowers Institute for Medical Research, Kansas City, MO*; McLennan, Rebecca, *Stowers Institute for Medical Research Kulesa Lab, Kansas City, MO*

312 **B70** **Essential functions of the ADAM13 cytoplasmic domain in cranial neural crest cell migration.** Abbruzzese, Genevieve, *University of Massachusetts Molecular & Cell Biology, Amherst, MA*; Cousin, Hélène, *Amherst*; Alfandari, Dominique, *Amherst, MA*

313 **B71** **Role of endothelin-A receptor in cardiac neural crest cell fate.** Zhang, Yanping, *TAMHSC-Baylor College of Dentistry, Dallas, TX*; McKnight, Mitchell T., *TAMHSC-Baylor College of Dentistry, Dallas, TX*; Ruest, L. Bruno, *TAMHSC-Baylor College of Dentistry, Dallas, TX*

314 **B72** ***Withdrawn***

315 **B73** **Calcium transients in trunk neural crest reveal the dynamics of cell migration and aggregation during peripheral nervous system development.** McKinney, Mary Cathleen, *Stowers Institute for Medical Research, Kansas City, MO*; Kulesa, Paul M., *Stowers Institute for Medical Research, Kansas City, MO*

316 **B74** **Migration and Transcriptional Profiling of Sacral Neural Crest Derivatives in the Lower Urinary Tract.** Buehler, Dennis P., *Vanderbilt University Medical Center Genetic Medicine, Nashville, TN*; Ireland, Sara, *Vanderbilt University, Nashville, TN*; Stephanie, Skelton, *Vanderbilt University, Nashville, TN*; Michelle, Southard-Smith, *Vanderbilt University, Nashville, TN*

317 **B75** **Ethanol exposure disrupts cell migration and cilia structure in developing embryos.** Boric, Katica A., *Universidad de Valparaiso Centro Interdisciplinario de Neurociencia Valparaiso, Valparaiso, Chile*; Couve, Eduardo, *Universidad de Valparaiso, Valparaiso, Chile*; Orio, Patricio, *CINV, Universidad de Valparaiso, Valparaiso, Chile*; Vargas, Fidel, *Universida de Valparaiso, Valparaiso, Chile*; Whitlock, Kathleen, *CINV, Universidad de Valparaiso, Valparaiso, Chile*

318 **B76** **Human MOB2 participates in cells migration through Erk signaling pathway.** Lin, Cheng-Han, *Tunghai University, Taichung, Taiwan*; Hu, Cheng-Po, *Tunghai University, Taichung, Taiwan*; Fan, Seng-Sheen, *Tunghai University, Taichung, Taiwan*

319 **B77** **FAK Is Required for Assembly of Podosome Rosettes.** Pan, Yi-Ru, *National Chung Hsing University/Department of Life Science, Taichung, Taiwan*; Chen, Hong-Chen, *National Chung Hsing University/Department of Life Science, Taichung, Taiwan*

320 **B78** **Somatic gonad precursor migration in C. elegans.** Rohrschneider, Monica, *NYU School of Medicine Developmental Genetics, New York, NY*; Nance, Jeremy, *NYU School of Medicine, New York, NY*

321 **B79** **Cytoskeletal polarization during collective cell migration in the Drosophila egg chamber.** Cetera, Maureen, *Chicago, IL*; Horne-Badovinac, Sally, *Chicago, IL*

322 **B80** **SMN: A role in axon growth/fasciculation and retaining MMC(m) motor neurons in the ventral neural tube.** Krull, Catherine E., *Univ of Michigan Biologic & Materials Sciences, Ann Arbor, MI*; Su, Fengyun, *University of Michigan, Ann Arbor, MI*; Sahin, Mustafa, *Harvard University and Childrens Hospital, Boston, MA*

323 **B81** **The Initial Phase of Facial Branchiomotor Neuron Migration is Independent of the Medial Longitudinal Fasciculus.** Wanner, Sarah J., *University of Chicago Organismal Biology and Anatomy, Chicago, IL*; Prince, Victoria, *Chicago, IL*

324 **B82** **Imaging and analysis of interactions between individually labeled spiral ganglion neurons and hair cells in the developing mammalian cochlea.** Coate, Thomas, *NIDCD/NIH, Bethesda, MD*; Goodrich, Lisa, *Dept. of Neurobiology, Harvard Medical School, Boston, MA*; Kelley, Matthew, *NIDCD/NIH, Bethesda, MD*

325 **B83** **Antagonism Between the Microtubule Plus-End-Tracking Proteins Msps and CLASP During Abl Kinase-Mediated Axon Pathfinding.** Lowery, Laura Anne, *Harvard Medical School Cell Biology, Boston, MA*; Lee, Haeryun, *Boston, MA*; Danuser, Gaudenz, *Boston, MA*; Van Vactor, David, *Boston, MA*

326 **B84** **The role of RAC1 in development of the zebrafish olfactory bulb.** Powers, Kristi M., *Pace University, Pleasantville, NY*; Thomas, Stacy J., *Pace University, Pleasantville, NY*; Horne, Jack, *Pace University Biology, Pleasantville, NY*

327 **B85** **Notum 2 is a Novel Regulator of Primary Motor Axon Guidance.** Cantu, Jorge A., *Children's Memorial Research Center Developmental Biology, Chicago, IL*; Topczewski, Jacek, *Northwestern University, Chicago, IL*

328 **B86** **A characterization of the cellular and molecular identities of diencephalic astroglia associated with the postoptic commissure during forebrain development in zebrafish.** Stein, Rachael, *Smith College, Northampton, MA*; Bashiruddin, Sarah, *Northampton, MA*; Alligood, Kristin, *Northampton, MA*; Parsons, Michael, *Baltimore, MD*; Barresi, Michael, *Northampton, MA*

329 **B87** **DSCAM-L Controls Self-Avoidance in Developing Peripheral Axon in Zebrafish.** Fuller, Miles H., *Morehouse College, Atlanta, GA*

330 **B88** **The homeobox gene Goosecoid acts as a repressor of planar cell polarity-mediated convergent extension.** Ulmer, Baerbel, *University of Hohenheim Zoology, Stuttgart, Germany*; Andre, Philipp, *Bethesda, MD*; Schweickert, Axel, *Stuttgart, Germany*; Deißler, Kirsten, *Stuttgart, Germany*; Blum, Martin, *Stuttgart, Germany*

331 **B89** ***In vivo*** **regulation of Sna1b by Hif-1alpha during zebrafish neural crest cells migration.** Barriga, Elias H., *Univ Andres Bello, Santiago, Chile*; Mayor, Roberto, *univ College London, London, UK*; Reyes, Ariel E., *Univ Andres Bello, Santiago, Chile*

Early Embryo Patterning

332 **B90** **The tight junction scaffolding protein cingulin regulates cellular delamination from the neuroepithelium.** Jhingory, Sharon G., *University of Maryland Animal and Avian Sciences, College Park, MD*; Wu, Chyong-Yi, *University of Maryland, College Park, MD*; Taneyhill, Lisa, *University of Maryland, College Park, MD*

333 **B91** **Investigating the role of claudin-1 in neural crest cell migration.** Neiderer, Theresa E., *University of Maryland Animal and Avian Sciences, College Park, MD*; Figat, Abigail, *University of Maryland, College Park, MD*; Taneyhill, Lisa, *University of Maryland, College Park, MD*

334 **B92** **Twist1 and Hand2 may play a role in organizing the anterior and posterior domains of the lower jaw.** Barron, Francie E., *Univ of Colorado Health Sci Ctr Craniofacial Biology, Aurora, CO*; Clouthier, David, *Univ of Colorado Denver Craniofacial Biology, Aurora, CO*

335 **B93** **Novel effects of folinic acid and folate supplementation on locomotor development in embryonic Zebrafish, *Danio rerio*.** Hattway, Holly, *Chicago*; Kosmin, Sarah, *Chicago*; Puryear, TK, *Chicago*; Saszik, Shannon, *Chicago, IL*

336 **B94** **Endomesoderm segregation involves cross talk between Notch and Wnt pathways through multiple intersecting regulatory circuits.** Sethi, Aditya J., *NIH|NIDCR Developmental Mechanisms Unit, Bethesda, MD*

337 **B95** **Elucidating the molecular mechanisms underlying cell movements in the visceral endoderm.** Joyce, Bradley, *University of Oxford Dept of Physiology, Anatomy & Genetics, Oxford, UK*; Srinivas, Shankar, *University of Oxford, Oxford, UK*

338 **B96** **Understanding inter-strain differences in pre-implantation mouse development.** Krawchuk, Dayana, *McGill University Human Genetics, Montreal, PQ, Canada*; Yamanaka, Yojiro, *McGill University, Goodman Cancer Research Center, Department of Human Genetics, Montréal, PQ, Canada*

339 **B97** **Investigating the role of the Hippo pathway member Nf2 in trophectoderm/inner cell mass specification.** Cockburn, Katherine, *Hospital for Sick Children Res Instit Developmental & Stem Cell Biology, Toronto, Canada*; Stephenson, Robert, *Department of Developmental & Stem Cell Biology, The Hospital for Sick Children, Toronto, ON, Canada*; Rossant, Janet, *Department of Developmental & Stem Cell Biology, The Hospital for Sick Children, Toronto, ON, Canada*

340 **B98** **Transforming growth factor-beta-related signaling in blastocyst morphogenesis.** Chen, Yijing, *Kent State University Biological Sciences, Kent, OH*; Guo, Jiami, *Kent State University, Kent, OH*; Li, Jibiao, *Kent State University, Kent, OH*

341 **B99** **Wnt8a is a target of miR430 post-transcriptional regulation.** Lekven, Arne C., *Texas A&M Univ Biology, College Station, TX*; Butler, Annika, *Texas A&M University, College Station, TX*; Baker, Kevin, *Texas A&M University, College Station, TX*; Whitener, Amy, *Texas A&M University, College Station, TX*; Narayanan, Anand, *Texas A&M University, College Station, TX*

342 **B100** **A Dorsalized and Cell Migration Maternal Effect Mutant in Zebrafish.** Langdon, Yvette, *Philadelphia, PA*; Mullins, Mary, *Philadelphia, PA*

343 **B101** **Identification and embryonic expression of a highly conserved Meis-linked gene.** Cochrane, Anna C., *Appalachian State University Biology, Boone, NC*; Carpenter, Brandon S., *University of Michigan, Ann Arbor, MI*; Graham, Brantley, *University of Kentucky, Lexington, KY*; Zerucha, Ted, *Appalachian State University, Boone, NC*

344 **B102** **A novel factor, Xenopus Oogenesis Related Gene (Xorg), is involved in dorsoventral axis establishment.** Olson, David J., *University of Iowa Biology, Iowa City, IA*; Houston, Douglas, *University of Iowa, Iowa City, IA*

345 **B103** **Division of the mesoderm into axial versus non-axial fates requires the Integrator Complex Subunit 6.** Kapp, Lee D., *Univ of Pennsylvania School of Medicine Cell & Develop Biology, Philadelphia, PA*; Elliott, Abrams, *Philadelphia, PA*; Florence, Marlow, *Philadelphia, PA*; Mary, Mullins, *Philadelphia, PA*

346 **B104** **Formation and Interpretation of the BMP morphogen gradient in the Drosophila embryo.** Peluso, Carolyn, *NICHD/NIH, Bethesda, MD*; Umulis, David, *Purdue University, W. Lafayette, IN*; Kim, Young-Jun, *NICHD/NIH, Bethesda, MD*; O'Connor, Michael, *University of Minnesota, Minneapolis, MN*; Serpe, Mihaela, *NIH/NICHD, Bethesda, MD*

347 **B105** **Gene regulatory networks in embryos depend on pre-existing spatial coordinates.** Wells, Jonathan, *Discovery Institute, Seattle, WA*

348 **B106** **Dpp/BMP pathway regulates maternal mRNA levels to pattern the dorsa-ventral axis in *Drosophila melanogaster* embryo.** Fontenele, Marcio, *Federal University of Rio de Janeiro, Rio de Janeiro, Brazil*; Pentagna, Náthalia, *Federal University of Rio de Janeiro, Rio de Janeiro, Brazil*; Araujo, Helena, *Federal University of Rio de Janeiro, Rio de Janeiro, Brazil*

349 **B107** **Characterization of the feedback circuit driving robust BMP signaling during embryonic dorsal-ventral patterning in Drosophila.** Gavin-Smyth, Jackie, *U of Chicago, IL*; Ferguson, Edwin, *University of Chicago, Chicago, IL*

350 **B108** **Arp2/3-mediated actin dynamics affect polarity maintenance in the C. elegans embryo.** Shivas, Jessica M., *University of Wisconsin-Madison Genetics, Madison, WI*; Skop, Ahna, *Madison, WI*

351 **B109** **Cell cycle arrest in node cells governs node cilia development to break the left-right symmetry.** Komatsu, Yoshihiro, *University of Michigan School of Dentistry, Ann Arbor, MI*; Kaartinen, Vesa, *University of Michigan, School of Dentistry, Ann Arbor, MI*; Mishina, Yuji, *University of Michigan, Ann Arbor, MI*

352 **B110** **Pkd1l1 and Pkd2 physically interact and establish left-right asymmetry.** Grimes, Daniel; Field, Sarah; Riley, Kerry-Lyn; Hilton, Helen; Simon, Michelle; Powles-Glover, Nicola; Siggers, Pam; Bogani, Deb; Greenfield, Andy; Norris, Dominic, *Oxfordshire, UK*

353 **B111** **FGF signaling controls brain asymmetry in zebrafish.** Neugebauer, Judith, *Univ of Utah Neurobiology & Anatomy, Salt Lake City, UT*; Yost, H. Joseph, *Salt Lake City, UT*

354 **B112** **Nipbl regulates organ laterality and Kupffer's vesicle development in zebrafish.** Muto, Akihiko, *University of California, Irvine Developmental and Cell Biology, Irvine, CA*; Calof, Anne, *University of California, Irvine, Anatomy & Neurobiol., Irvine, CA*; Schilling, Thomas, *University of California, Irvine, Dev. & Cell Biol., Irvine, CA*; Lander, Arthur, *University of California, Irvine, Dev. & Cell Biol., Irvine, CA*

355 **B113** **Serotonin signaling is required for Wnt-dependent development of the ciliated gastrocoel roof plate and leftward flow in Xenopus.** Blum, Martin, *University of Hohenheim Zoology, Stuttgart, Germany*; Beyer, Tina, *Stuttgart, Germany*; Thumberger, Thomas, *Stuttgart, Germany*; Vick, Philipp, *Stuttgart, Germany*; Danilchik, Michael, *Portland, OR*; Bogusch, Susanne, *Stuttgart, Germany*; Ulmer, Bärbel, *Stuttgart, Germany*; Walentek, Peter, *Stuttgart, Germany*; Schweickert, Axel, *Stuttgart, Germany*

356 B114 Gastric H+/K+ATPase-dependent Wnt-signaling is required for FoxJ1 expression and cilia polarization in Xenopus left-right axis formation. Walentek, Peter, *University of Hohenheim Institute of Zoology, Stuttgart, Germany*; Beyer, Tina, *University of Hohenheim, Stuttgart, Germany*; Schweickert, Axel, *University of Hohenheim, Stuttgart, Germany*; Schneider, Isabelle, *University of Hohenheim, Stuttgart, Germany*; Thumberger, Thomas, *University of Hohenheim, Stuttgart, Germany*; Blum, Martin, *University of Hohenheim, Stuttgart, Germany*

357 B115 Asymmetric expression of Claudin-10 is required for correct left-right patterning. Collins, Michelle M., *McGill University Human Genetics, Montreal, PQ, Canada*; Simard, Annie, *Research Institute of the Montreal Children's Hospital, Montreal, PQ, Canada*; Ryan, Aimee, *McGill University, Montreal, PQ, Canada*

358 B116 Detection of dynamic fucosylation at cellular level during zebrafish development. Feng, Lei, *Albert Einstein College of Medicine Department of Biochemistry, Bronx, NY*; Jiang, Hao, *Albert Einstein College of Medicine, Bronx, NY*; Zheng, Tianqing, *Albert Einstein College of Medicine, Bronx, NY*; Wu, Peng, *Albert Einstein College of Medicine, Bronx, NY*

359 B117 Loss of mouse Porcupine homolog recapitulates multiple embryonic Wnt signaling defects. Biechele, Steffen, *Sickkids Research Institute Developmental & Stem Cell Biology, Toronto, ON, Canada*; Cox, Brian, *The Hospital for Sick Children Research Institute, Toronto, ON, Canada*; Rossant, Janet, *The Hospital for Sick Children Research Institute, Toronto, ON, Canada*

360 B118 The P4 ATPase TAT-5 prevents the budding of extracellular vesicles and phosphatidylethanolamine exposure during *C. elegans* embryogenesis. Wehman, Ann M., *NYUMC - Skirball Developmental Genetics, New York, NY*; Grant, Barth, *Piscataway, NJ*; Nance, Jeremy, *NYU School of Medicine, Skirball Institute, New York, NY*

361 B119 A role for ADMP in scaling of embryonic tissues to generate equally proportioned embryos. Leibovich, Avi, *Institute for Medical Research Israel-Canada, Hebrew University, Jerusalem, Israel*; Ben-Zvi, Danny, *Weizmann Institute of Science, Rehovot, Israel*; Barkai, Naama, *Weizmann Institute of Science, Rehovot, Israel*; Fainsod, Abraham, *Faculty of Medicine, Hebrew University Developmental Biology and Cancer Research, Jerusalem, Israel*

362 B120 Spatial patterning of muscle fibers in the *X. laevis* embryo. Sabillo, Armbien, *San Francisco State University, San Francisco, CA*; Krneta-Stankic, Vanja, *San Francisco State University, San Francisco, CA*; Domingo, Carmen, *San Francisco State University, San Francisco, CA*

363 B121 A genetic modifier screen identifies chromosomal intervals harboring potential midline interacting genes. Das, Sudeshna, *University of Southern Mississippi, Hattiesburg, MS*; Kumar, Deepak, *University of Southern Mississippi, Hattiesburg, MS*; Warren, Katie, *University of Southern Mississippi, Hattiesburg, MS*; Leal, Sandra, *University of Southern Mississippi, Hattiesburg, MS*

364 B122 Stabilin2 is Involved in Zebrafish Arterial Venous Differentiation. Rost, Megan, *Cincinnati Children's Hospital Medical Center, University of Cincinnati, Cincinnati, OH*; Wong, Kuan Shen, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Sumanas, Saulius, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

365 B123 Understanding early stages of Hematopoietic Stem Cell maturation during mouse embryogenesis. Rhee, Jerry, *CMRC/ Northwestern, Chicago, IL*; Iannaccone, Philip, *CMRC/Northwestern, Chicago, IL*

Stem Cells and Tissue Regeneration

366 B124 A Lissencephaly-1-like gene is required for stem cell maintenance in the planarian *Schmidtea mediterranea.* Cowles, Martis W., *San Diego State University Biology, San Diego, CA*; Hubert, Amy, *San Diego State University, San Diego, CA*; Zayas, Ricardo M., *San Diego State University, San Diego, CA*

367 B125 The role of BMP signaling in mouse embryonic stem cells. Luong, Mui Nhuc; Blitz, Ira; Cho, Jin; Daily, Kenny; Patel, Vishal; Baldi, Pierre; Cho, Ken, *University of California, Irvine Developmental Biology, Irvine, CA*

368 B126 Nodal-related signaling in stem cell maintenance. Galvin-Burgess, Katherine, *University of Kansas Med. Center, Kansas City, KS*; Travis, Emily, *University of Kansas Med. Center, Kansas City, KS*; Vivian, Jay L, *Univ of Kansas Med Ctr, Kansas City, KS*

369 B127 Role of FoxD3 in maintenance of pluripotency and early lineage segregation in human embryonic stem cells. Arduini, Brigitte, *Rockefeller University Lab of Molecular Embryology, New York, NY*; Brivanlou, Ali H., *The Rockefeller University, Lab of Molecular Embryology, New York, NY*

370 B128 ZNF 281 decides the early differentiation fate of human mesenchymal stem cells. Seo, Kwang-won, *Seoul National University College of Vet. Med., Adult Stem Cell Research Lab, Seoul, Republic of Korea*; Lee, Seon-Kyung; Bhandari, Dilli Ram; Park, Sang-Bum; Roh, Kyung-Hwan; Yang, Se-Ran; Kang, Kyung-Sun, *Seoul National University, Seoul, Republic of Korea*

371 B129 Polycomb a potential barrier to de-differentiation in somatic plant tissue. Nicolaescu, Vlad, *University of Chicago, Chicago, IL*; Malamy, Jocelyn, *University of Chicago, Chicago, IL*

372 B130 LIN28-let-7 regulate progenitor cell expansion and differentiation during organogenesis. Jiang, Qiang, *Medical College of Wisconsin, Milwaukee, WI*; Meng, Hui, *Medical College of Wisconsin, Milwaukee, WI*; Desai, Ridham, *Samuel Lunenfeld Research Institute, Toronto, Canada*; Kemper, Kevin, *University of Medicine and Dentistry of New Jersey, Stratford, NJ*; Nagy, Andras, *Samuel Lunenfeld Research Institute, Toronto, Canada*; Moss, Eric, *University of Medicine and Dentistry of New Jersey, Stratford, NJ*; Lee, Vivian M., *Medical College of Wisconsin Pediatrics, Milwaukee, WI*

373 B131 The role of Smad4-depdendent signaling in mouse trophoblast stem cells. Guo, Jiami, *Kent State University, Kent, OH*; Yuvaraj, Padhmavathy, *Kent State University, Kent, OH*

374 B132 Exploring the evolutionary loss of regeneration: a comparative genomics study in planarians. Sikes, James M., *University of Illinois - Urbana-Champaign Cell & Developmental Biology, Urbana, IL*; Newmark, Phillip A., *Howard Hughes Medical Institite, University of Illinois, Urbana, IL*

375 B133 A neuronal calcium channel mediates posteriorizing cues during Planarian regeneration. Chan, John D., *University of Minnesota Pharmacology, Minneapolis, MN*; Marchant, Jonathan, *Dept. Pharmacology & Stem Cell Institute, University of Minnesota, Minneapolis, MN*

376 B134 A screen to identify genes involved in regeneration of the planarian nervous system. Hubert, Amy, *San Diego State University, San Diego, CA*; Cowles, Martis W., *San Diego State University, San Diego, CA*; Taylor, Matthew R., *San Diego State University, San Diego, CA*; Zayas, Ricardo M., *San Diego State University, San Diego, CA*

377 B135 **Characterizing the role of Eg5 kinesin on mediating neural stem cell division in the developing zebrafish neural tube.** Johnson, Kimberly A., *University of Massachusetts Amherst Molecular & Cellular Biology, Northampton, MA*; Moriarty, Chelsea, *Smith College, Northampton, MA*; Ortman, Alissa, *Smith College, Northampton, MA*; Bernardos, Rebecca, *Smith College, Northampton, MA*; Ngo, Kim Chi, *Smith College, Northampton, MA*; Dipietrantonio, Kristina, *Smith College, Northampton, MA*; Barresi, Michael J., *Smith College, Northampton, MA*

378 B136 **Genetic Dissection of Sonic hedgehog/Gli Signaling in Adult Neurogenesis.** Petrova, Ralitsa, *Memorial Sloan-Kettering Cancer Center, Developmental Biology Program, New York, NY*; Garcia, Anna Denise R., *MCDB, UC Santa Cruz, Santa Cruz, CA*; Joyner, Alexandra L., *Memorial Sloan-Kettering Cancer Center, Developmental Biology Program, New York, NY*

379 B137 **Response of Glial Precursors To Embryonic Brain Injury.** Domowicz, Miriam S., *University of Chicago Pediatrics, Chicago, IL*; Henry, Judy, *University of Chicago, Department of Pediatrics, Chicago, IL*; Schwartz, Nancy B., *University of Chicago, Department of Pediatrics, Chicago, IL*

380 B138 **Post-traumatic neural regeneration in sea cucumbers (Echinodermata: *Holothuroidea*).** Mashanov, Vladimir, *University of Puerto Rico Dept. of Biology, San Juan, Puerto Rico*; Zueva, Olga, *University of Puerto Rico, San Juan, Puerto Rico*; Garcia-Arrarás, José, *University of Puerto Rico, San Juan, Puerto Rico*

381 B139 **Spinal cord regeneration in *Xenopus laevis* proceeds through activation of Sox2+ cells.** Gaete, Marcia; Muñoz, Rosana; Sánchez, Natalia; Tampe, Ricardo; Moreno, Mauricio; Contreras, Esteban; Larraín, Juan, *P. Universidad Católica de Chile, Santiago, Chile*

382 B140 **miRNAS and regulation of retinoid signaling in the regenerating adult newt spinal cord.** Lepp, Amanda, *Brock University, St. Catharines, ON, Canada*; Carlone, Robert L., *Brock University Biological Sciences, Fonthill, ON, Canada*

383 B141 **The Homology of EVI5 and ABK Sequences among Animals.** Swihart, Corrie J., *IU School of Dentistry Oral Biology, Indianapolis, IN*

384 B142 **Myelinated peripheral axons in the adult zebrafish maxillary barbel (ZMB): a new model for adult re-myelination during sensory appendage regeneration.** Moore, Alex, *DePaul University, Chicago, IL*; Mark, Tiffany, *DePaul University, Chicago, IL*; LeClair, Elizabeth E., *DePaul Univ Dept of Biological Sciences, Chicago, IL*

385 B143 **The roles of FGF and Wnt signaling during zebrafish maxillary barbel regeneration.** Duszynski, Robert J., *DePaul University Biological Sciences, Chicago, IL*; Topczewski, Jacek, *Northwestern University Feinberg School of Medicine/CMRC, Chicago, IL*; LeClair, Elizabeth, *DePaul University, Chicago, IL*

386 B144 **Compartmentalized Notch signaling sustains epithelial mirror symmetry.** Wibowo, Indra, *Barcelona, Spain*; Sousa, Filipe, *Barcelona, Spain*; Satou, Chie, *National Institutes of Natural Sciences, Okazaki Institute for Integrative Bioscience, Higashiyama 5-1, Myodaiji, Okazaki, Aichi, Japan*; Higashijima, Shin-ichi, *Higashiyama 5-1, Myodaiji, Okazaki, Aichi, Japan*; López-Schier, Hernán, *Center for Genomic Regulation, Barcelona, Spain*

387 B145 **Analysis of alkaline phosphatase expression in the regenerating zebrafish lateral line.** Steiner, Aaron, *The Rockefeller University and Howard Hughes Medical Institute, New York, NY*; Hudspeth, A. James, *The Rockefeller University and Howard Hughes Medical Institute, New York, NY*

388 B146 **Characterization of NeuroD during Zebrafish Retinal Development and Regeneration.** Thomas, Jennifer L., *Wayne State Univ. School of Medicine Anatomy & Cell Biology, Detroit, MI*; Hitchcock, Peter, *University of Michigan Kellogg Eye Center, Ann Arbor, MI*; Thummel, Ryan, *Wayne State University School of Medicine, Detroit, MI*

389 B147 **Expression of the Eph/ephrin system in chick retina regeneration.** Di Napoli, Jennifer I, *IBCN, Buenos Aires, Argentina*; Luz-Madrigal, Agustin, *Miami University, Oxford, OH*; Echeverry, Nancy P, *Miami University, Oxford, OH*; del Rio-Tsonis, Katia, *Miami University, Oxford, OH*; Scicolone, Gabriel E, *IBCN, Buenos Aires, Argentina*

390 B148 **Expression of stem cell pluripotency-inducing factors during chick retina regeneration.** Luz-Madrigal, Agustin, *Miami University, Oxford, OH*; Grajales-Esquivel, Erika, *Miami University, Oxford, OH*; DiLorenzo, Ashley, *Miami University, Oxford, OH*; Dannenfelser, Janessa, *Miami University, Oxford, OH*; Del Rio-Tsonis, Katia, *Miami University, Oxford, OH*

391 B149 **Canonical Shh signaling inhibits FGF-induced transdifferentiation.** Barbosa Sabanero, Karla, *Miami University, Oxford, OH*; Luz-Madrigal, Agustin, *Miami University, Oxford, OH*; Yang, Fei, *Miami University, Oxford, OH*; Del Rio-Tsonis, Katia, *Miami University, Oxford, OH*

392 B150 ***Withdrawn***

393 B151 **Epidermal wound response activators and mechanisms of control.** Juarez, Michelle T., *University of California, San Diego Cell & Developmental Biology, La Jolla, CA*; McGinnis, William, *UCSD, La Jolla, CA*

394 B152 **Characterizing the cellular process of renal repair in the *Xenopus laevis* pronephric kidney.** Caine, Shoshoni T., *Tufts University Biology, Medford, MA*; McLaughlin, Kelly, *Tufts University, Medford, MA*

395 B153 **Effect of proteasome and protease inhibitors on intestinal regeneration.** Pasten, Consuelo, *San Juan, Puerto Rico*; Torres, Stephanie, *University of Puerto Rico, Rio Piedras campus, San Juan, Puerto Rico*; Noya, Monica, *San Juan, Puerto Rico*; Rosa, Rey, *San Juan, Puerto Rico*; Garcia-Arrarás, José, *San Juan, Puerto Rico*

396 B154 **Examination of stem cells, regeneration, and gut development in the sea anemone *Nematostella vectensis.*** Dunn, Matthew, *Stony Brook University, Stony Brook, NY*; Gerald, Thomsen, *Stony Brook University, Stony Brook, NY*

397 B155 **Dynamic imaging and isolation of enteric neural crest-derived progenitors based on Sox10-Histone2BVenus BAC transgene expression.** Southard-Smith, E. Michelle, *Vanderbilt University Medicine, Div of Genetic Medicine, Nashville, TN*; Corpening, Jennifer C., *Vanderbilt University, Nashville, TN*; Deal, Karen K, *Vanderbilt University, Nashville, TN*; Cantrell, V Ashley, *Vanderbilt University, Nashville, TN*; Skelton, Stephanie B., *Vanderbilt University, Nashville, TN*; Buehler, Dennis P., *Vanderbilt University, Nashville, TN*

398 B156 **Profiling the Molecular, Cellular and Extracellular Programs of Vertebrate Heart Regeneration.** Mercer, Sarah, *Northwestern University Feinberg School of Medicine, Chicago, IL*; Guzman, Claudia, *Children's Memorial Research Center, Chicago, IL*; Cheng, Chia-ho, *University of Massachusetts-Lowell, Lowell, MA*; Odelberg, Shannon, *University of Utah School of Medicine, Salt Lake City, UT*; Marx, Ken, *University of Massachusetts-Lowell, Lowell, MA*; Simon, Hans-Georg, *Northwestern University Feinberg School of Medicine, Chicago, IL*

399 **B157** **HDAC1 plays an important role in the differentiation of embryonic Stem cells and induced Pluripotent Stem cells into cardiovascular lineages.** Hoxha, Eneda; Lambers, Erin; Ramirez, Veronica; Krishnamurthy, Prasanna; Verma, Suresh; Thal, Melissa; Kishore, Raj, *Northwestern University Feinberg Cardiovascular Research Institute, Evanston, IL*

400 **B158** **Insights into the establishment of positional information in blastema during Axolotl limb regeneration.** McCusker, Catherine M., *UC Irvine, Irvine, CA*; Gardiner, David M., *UC Irvine, Irvine, CA*

Molecular Medicine and Development

401 **B159** **Disruption of an essential conserved Pbx-dependent regulatory module causes Cleft Lip/Palate (CL/P).** Selleri, Licia, *Cornell Univ Cell & Dev. Biology, New York, NY*; Ferretti, Elisabetta, *Cornell Weill Medical College, New York, NY*; Li, Bingsi, *New York, NY*; Rediet, Zewdu, *New York, NY*; Hebert, Jean M., *New York, NY*; Williams, Trevor, *Denver, CO*; Dixon, Jill, *Manchester, UK*; Dixon, Michael J., *Manchester, UK*; Depew, Michael J., *London, UK*

402 **B160** **TGF-β promotes murine palatal growth by Smad dependent and Smad independent pathways.** Zhu, Xiujuan, *University of Nebraska Medical Center, Lincoln, NE*; Liu, Changchih, *university of Nebraska Medical Center, Lincoln, NE*; Nawshad, Ali, *Univ of Nebraska Medical Center Oral Biology, College of Dentistry, Lincoln, NE*

403 **B161** **Mechanical and biochemical relationship between the developing muscle and the palate.** Kablar, Boris, *Dalhousie Medical School Anatomy and Neurobiology, Halifax, NS, Canada*; Rot, Irena, *Dalhousie University, Dept. of Anatomy and Neurobiology, Halifax, Canada*

404 **B162** **Resveratrol prevents impairment in MAP kinase pathways and protects the embryos against malformations in a rodent model of diabetic embryopathy.** Kumar, Ambrish, *University of South Carolina, Columbia, SC*; Singh, Chandra, *University of South Carolina, Columbia, SC*; DiPette, Donald J., *Unversity of South Carolina, Columbia, SC*; Singh, Ugra S., *University of South Carolina, Columbia, SC*

405 **B163** **High Concentrations of Peroxynitrite in Sperm induces Infertility on Spontaneously Diabetic Rat Models.** Yoon, Jae Hee; Kim, Ji Sun; Park, Gun Hyun; Bae, Sung Hun; Kim, Sung Won; Park, Cheol Ho; Hwang, You Jin; Kim, Dae Young, *Gachon University of Medicine and Science, Incheon, Republic of Korea*

406 **B164** **The role of folic acid in regulating epigenetic processes during mammalian embryonic development.** Peljto, Mirza, *University of Colorado-Denver Pediatrics, Aurora, CO*; Marean, Amber, *University of Colorado-Denver Pediatrics, Aurora, CO*; Niswander, Lee, *University of Colorado-Denver Pediatrics, Aurora, CO*

407 **B165** **Sprouty loss of function mutations in the mouse results in defecst characteristic of 22q11 deletion syndrome, which are exacerbated by Tbx1 haploinsufficiency.** Simrick, Subreena, *London, UK*; Szumska, Dorota, *Oxford, UK*; Gardiner, Jennifer, *London, UK*; Karun, Sagar, *London, UK*; Morrow, Bernice, *New York, UK*; Bhattacharya, Shoumo, *Oxford, UK*; Basson, Michiel A., *King's College London Craniofacial Development, London, UK*

408 **B166** **Reciprocal rescue of sensory cell cilia defects by Cep290 and Bbs6 (Mkks) alleles.** May-Simera, Helen, *NIH NIDCD, Bethesda, MD*; Rachel, Rivka, *NEI, NIH, Bethesda, MD*; Byung Yoon, Byung Yoon, *NIDCD, NIH, Rockville, MD*; Friedman, Thomas, *NIDCD, NIH, Rockville, MD*; Swaroop, Anand, *NEI, NIH, Bethesda, MD*; Kelley, Matthew, *NIDCD, NIH, Bethesda, MD*

409 **B167** **Shwachman Diamond Syndrome is a p53-independent ribosomopathy.** Provost, Elayne, *Johns Hopkins University, Baltimore, MD*; Ashar, Foram, *Johns Hopkins University, Baltimore, MD*; Parsons, Michael, *Johns Hopkins University, Baltimore, MD*; Leach, Steven, *Johns Hopkins University, Baltimore, MD*

410 **B168** **BMP signaling as a context-dependent regulator of myocardial proliferation and apoptosis: relevance to congenital heart defects and adult heart disease.** Choi, Murim, *Duke University, Durham, NC*; Klingensmith, John, *Duke University, Durham, NC*; Pachori, Alok, *Duke University, Durham, NC*

411 **B169** **Poster: TGF-beta signaling reduces FGF-10 in hypoxic newborn mouse lung during the critical period of lung development.** Nicola, Teodora, *UAB Pediatrics Neonatology, Birmingham, AL*

412 **B170** **A mouse model for juvenile hydrocephalus.** Appelbe, Oliver; Glick, Elena; Ramalie, Jenniffer; Steshina, Ekaterina; Schmidt, Jennifer, *Univ of Illinois At Chicago Biological Sciences, Chicago, IL*

413 **B171** **Characterization of zebrafish orthologues of the human B3GALTL gene involved in Peters-Plus syndrome.** Weh, Eric; Mlodik, Nevin; Meheisen, Sanaa; Semina, Elena, *Medical College of Wisconsin, Wauwatosa, WI*

414 **B172** **The planarian *Schmidtea mediterranea* as a free-living model for understanding and controlling flatworm parasites.** Collins, James J., *Univ of Illinois At Urbana-Champaign Cellular & Developmental Biology, Urbana, IL*; Newmark, Phillip, *Cellular & Developmental Biology and Howard Hughes Medical Institute, Univ of Illinois At Urbana-Champaign, Urbana, IL*

Cell Proliferation

415 **B173** **Notch Mediates a Genetic Switch in Neural Lineage Topology.** MacDonald, Ryan B.; Ulvklo, Carina; Bivik, Caroline; Baumgardt, Magnus; Karlsson, Daniel; Thor, Stefan, *Linkoping University Clinical and Experimental Medicine, Linkoping, Sweden*

416 **B174** **Arx regulates proliferation of cortical progenitor cells.** Simonet, Jacqueline C., *University of Pennsylvania Cell and Developmental Biology, Philadelphia, PA*; Cho, Ginam, *Children's Hospital of Philadelphia, Philadelphia, PA*; Golden, Jeffrey, *University of Pennsylvania Department of Cell and Developmental Biology, Philadelphia, PA*

417 **B175** **Folic acid regulates Fgfr4 in neural stem cells.** Boshnjaku, Vanda, *Children's Memorial Research Center, Chicago, IL*; Ichi, Shunsuke, *Children;s Memorial Research Center, Chicago, IL*; Mania-Farnell, Barbara, *Purdue University Calumet, Hammond, IN*; Xi, Guifa, *Children's Memorial Research Center, Chicago, IL*; Sharma, Saurabh, *Children's Memorial Research Center, Chicago, IL*; McLone, David, *Children's Memorial Hospital, Chicago, IL*; Tomita, Tadanori, *Children's Memorial Hospital, Chicago, IL*; Mayanil, C. Shekhar, *Children's Memorial Res Center Developmental Biology Program, Chicago, IL*

418 **B176** **Expression of cell cycle regulators during zebrafish development.** Dobbs-McAuliffe, Betsy L., *Central Connecticut State Univ Biomolecular Sciences, New Britain, CT*

419 **B177** **Brambleberry, a novel nuclear envelope associated protein, acts in membrane fusion during cleavage stage development.** Abrams, Elliott W., *Univ of Pennsylvania Cell & Developmental Biology, Philadelphia, PA*; Marlow, Florence,

Philadelphia, PA; Kapp, Lee, *University of Pennsylvania, Philadelphia, PA*; Zhang, Hong, *University of Pennsylvania Cell & Developmental Biology, Philadelphia, PA*; Mullins, Mary, *University of Pennsylvania Cell & Developmental Biology, Philadelphia, PA*

420 **B178** **Activated Stat is a supercompetitor that acts independently of Myc and ribosome biogenesis.** Rodrigues, Aloma, *NYU School of Medicine, New York, NY*; Grewal, Savraj, *University of Calgary, Calgary, AB, Canada*; Reyes-Robles, Tamara, *NYU School of Medicine, New York, NY*; Wu, D. Christine, *Columbia University, New York, NY*; Johnston, Laura, *Columbia Univeristy, New York, NY*; Bach, Erika A., *New York University School of Medicine Pharmacology, New York, NY*

421 **B179** **Interaction between the *Xenopus* morphogenetic factor tumorhead and its putative binding protein X-FBXO30.** Flores, Noelia, *University of Puerto Rico at Humacao, Humacao, PR*; Zbinden, Thedor, *University of Puerto Rico at Humacao, Humacao, PR*; Ayala, Jesús, *University of Puerto Rico at Humacao, Humacao, PR*; Traverso, Edwin E., *University of Puerto Rico At Humacao Biology, Humacao, PR*

422 **B180** **FOG-3/Tob can either promote or inhibit proliferation in the Caenorhabditis elegans germline.** Snow, Josh J., *University of Wisconsin-Madison Biochemistry, Madison, WI*; Lee, Myon-Hee, *Brody School of Medicine at East Carolina University, Greenville, NC*; Kroll-Conner, Peggy, *Madison, WI*; Kimble, Judith, *Madison, WI*

423 **B181** **Activated FoxM1 in beta cell mass expansion and recovery.** Golson, Maria, *Vanderbilt University, Nashville, TN*; Warfield, Courtney, *Vanderbilt University, Nashville, TN*; Gannon, Maureen, *Vanderbilt University, Nashville, TN*

424 **B182** **This paper has been re-scheduled to Poster Session I, board B80**

Functional Genomics

425 **B183** **Pantropic tetroviruses: A new transduction tool for sea urchin embryos.** Core, Amanda B., *Boston University Biology, Boston, MA*; Reyna, Arlene, *Boston, MA*; Conaway, Evan, *Boston, MA*; Bradham, Cynthia, *Boston, MA*

426 **B184** **The *C. elegans* T-box factor MLS-1 requires Groucho co-repressor interaction for uterine muscle specification.** Miller, Raymond, *University of Illinois at Chicago, Chicago, IL*; Okkema, Peter, *University of Illinois at Chicago, Chicago, IL*

427 **B185** **GEISHA: The chicken embryo *in situ* hybridization expression database.** Darnell, Diana; Pier, Maricela; Sesepasara, Terry; Davey, Sean; Yatskievych, Tatiana; Antin, Parker, *University of Arizona Cellular & Molecular Medicine, Tucson, AZ, USA*

428 **B186** **The Gene Expression Database (GXD): A resource of mouse developmental data.** Finger, Jacqueline; Hayamizu, Terry; McCright, Ingeborg; Eppig, Janan; Kadin, James; Richardson, Joel; Ringwald, Martin, *The Jackson Laboratory, Bar Harbor, ME*

Poster and Exhibit Session III

Sunday, July 24, 12:30–3:30 PM *Riverside Center West*
Author presentation: Odd board numbers—12:30–2 PM
Even board numbers—2–3:30 PM
Set-up: July 23, 8–9 PM Tear down: Saturday, July 24, 3:30–5 PM
Poster themes: Patterning and Transcription Factors—Development and Evolution—Gene Regulation—Late Abstracts

Patterning and Transcription Factors

429 **B1** **Bmp, Endothelin1, and Jagged1 signaling are integrated through Gremlin2 to generate distinct skeletal identities within the face.** Zuniga, Elizabeth, *University of Southern California Cell and Neurobiology, Los Angeles, CA*

430 **B2** **Twist1 function during mandibular development.** Ruest, Louis-Bruno, *Baylor College of Dentistry Biomedical Sciences, Dallas, TX*; Zhang, Yanping; Blackwell, Evan L.; McKnight, Mitchell T.; Knutsen, Gregory R., *TAMHSC-Baylor College of Dentistry, Dallas, TX*

431 **B3** **Ectodermal-specific inactivation of Endothelin-1 causes craniofacial developmental defects in mice.** Tavares, Andre Luiz Pasqu; Garcia, Elvin; Kuhn, Katherine; Woods, Crystal; Williams, Trevor; Clouthier, David, *University of Colorado at Denver Craniofacial Biology, Aurora, CO*

432 **B4** **Nkx2.5 regulates hand2 expression in the zebrafish pharyngeal arches via a conserved enhancer.** Ikle, Jennifer; Artinger, Kristin; Clouthier, David, *University of Colorado Denver, Aurora, CO*

433 **B5** **The role of Fox genes in craniofacial development in zebrafish.** Balczerski, Bartosz, *University of Southern California Keck Sch of Med Stem Cell & Regen Med, Los Angeles, CA*; Louie, Kristin, *University of Southern California Keck School of Medicine Broad CIRM Center for Stem Cell and Regenerative Medicine, Los Angeles, CA*; Crump, Gage, *University of Southern California Keck School of Medicine Broad CIRM Center for Stem Cell and Regenerative Medicine, Los Angeles, CA*

434 **B6** **Missing intramembranous bones in the skull via knockdown of SHH and BMP.** Duench, Kellie, *Saint Mary's University, Halifax, NS, Canada*; Franz-Odendaal, Tamara A., *Mount Saint Vincent University Dept of Biol, Halifax, NS, Canada*

435 **B7** **Yin-Yang1 is required in the epiblast during mammalian gastrulation.** Trask, Mary; Hiller, Jacob; Pawlak, John; Tremblay, Kimberly; Mager, Jesse, *University of Mass, Amherst Vet and Animal Sciences, Amherst, MA*

436 **B8** **Cloning and functional study of Nanog in zebrafish.** Tian, Jing; Chng, Serene C.; Ong, JunXian; Reversade, Bruno, *Institute of Medical Biology, A*star, Singapore, Singapore*

437 **B9** **Myogenin is Expressed During Primary Myogenesis in Xenopus.** Young, Christina D., *University of Texas at San Antonio, San Antonio, TX*; Howard, Susan C., *University of Texas at San Antonio, San Antonio, TX*; Mueller, Paul R., *University of Texas At San Antonio Department of Biology, San Antonio, TX*

438 **B10** **Loss of a CITED-family transcription coactivator results in muscular atrophy and impaired motility.** Devakanmalai, Gnanapackiam Sheela, *Albert Einstein College of Medicine Genetics Department, Bronx, NY*; Ozbudak, Ertugrul M., *Albert Einstein College of Medicine Genetics, Bronx, NY*

439 **B11** **Foxa1 and Foxa2 in the Intervertebral Disk.** Maier, Jennifer; Lo, Yin Ting; Harfe, Brian, *Gainesville, FL*

440 **B12** **Differential Requirement of ZIC3 Function In Cardiac Development and X-linked Heterotaxy.** Jiang, Zhengxin, *Baylor College of Medicine Dept of Molecular & Human Genetics, Houston, TX;* Zhu, Lirong; Hu, Lingyun; Pautler, Robia; Justice, Monica; Belmont, John, *Baylor College of Medicine, Houston, TX*

441 **B13** **Hox genes control the axis elongation process in chicken embryo.** Denans, Nicolas, *IGBMC Olivier Pouquie Lab, Illkirch, France*; Iimura, Tadahiro, *Tokyo Medical and Dental University International Research Center for Molecular Science in Tooth and Bone Diseases Department of Molecular Pathology, Tokyo, Japan*; Pourquie, Olivier, *IGBMC Inserm U964, CNRS (UMR 7104), Université de Strasbourg, Illkirch, France*

442 **B14** **Role of 5'HOXD genes in the endochondral ossification.** González-Martín, Carmen, *CSIC, Santander, Spain*; Garrido-Allepuz, Carlos, *CSIC, Santander, Spain*; Ros, Marian, *CSIC, Santander, Spain*

443 **B15** **HMGB factors are required for posterior digit development through integrating Shh, Wnt and BMP signaling Pathways in the forelimb.** Itou, Junji, *Department of Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN*; Taniguchi, Noboru, *Department of Molecular and Experimental Medicine, The Scripps Research Institute, La Jolla, CA*; Oishi, Isao, *Health Research Institute, National Institute of Advanced Industrial Science and Technology, Ikeda, Japan*; Kawakami, Hiroko, *Department of Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN*; Lotz, Martin, *Department of Molecular and Experimental Medicine, The Scripps Research Institute, La Jolla, CA*; Kawakami, Yasuhiko, *Department of Genetics, Cell Biology and Development, Developmental Biology Center, University of Minnesota, Minneapolis, MN*

444 **B16** **Total loss of limb bud retinoic acid signaling in Rdh10 mutants does not affect limb patterning but results in interdigital webbing.** Cunningham, Thomas J., *Sanford-Burnham Med Research Institute Development and Aging, La Jolla, CA*; Chatzi, Christina, *Sanford-Burnham Medical Research Institute, La Jolla, CA*; Sandell, Lisa, *Stowers Institute for Medical Research, Kansas City, MO*; Trainor, Paul, *Stowers Institute for Medical Research, Kansas City MO*; Duester, Gregg, *Sanford-Burnham Medical Research Institute, La Jolla, CA*

445 **B17** **Nucleo-Cytoplasmic Shuttling of Tbx5 Affects Migration of Limb Precursor Cells.** Holtrup, Brandon, *Northwestern University Feinberg School of Medicine, Chicago, IL*; Klosowiak, Julian, *Northwestern University Feinberg School of Medicine, Chicago, IL*; Camarata, Troy, *Harvard Medical School, Boston, MA*; Simon, Hans-Georg, *Northwestern University Feinberg School of Medicine, Chicago, IL*

446 **B18** ***Withdrawn***

447 **B19** **Prolonged FGF signaling is necessary for foregut organ induction in *Xenopus*.** Shifley, Emily T., *Cincinnati Childrens Hospital Med Ctr Developmental Biology, Norwood, OH*; Zorn, Aaron, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

448 **B20** **The role of Foxi3 in otic placode induction.** Mayle, Ryan, *Houston, TX*; Ohyama, Takahiro, *Los Angeles, CA*; Edlund, Renee, *Houston, TX*; Zhang, Hongyuan, *Houston, TX*; Groves, Andrew, *Houston, TX*

449 **B21** **Patterning of the vertebrate hindbrain: a computational approach.** Bouchoucha, Yassine; Reingruber, Juergen; Le Men, Johan; Gilardi-Hebenstreit, Pascale; Holcman, David; Charnay, Patrick, *Institute of Biology of the Ecole Normale Supérieure (IBENS), Paris, France*

450 **B22** **Nr2f2 modulates FGF signaling to pattern rhombomere territories in the zebrafish hindbrain.** Love, Crystal E., *University of Chicago Developmental Biology, Chicago, IL*; Prince, Victoria, *The University of Chicago, Chicago, IL*

451 **B23** **Sox21 is the Maintenance Factor for Neural Progenitors.** Whittington, Niteace C.; Cunningham, Doreen D.; Casey, Elena S., *Georgetown University Biology, Washington, DC*

452 **B24** **Ascl1 genetics reveals insights into cerebellum local circuit assembly.** Sudarov, Anamaria, *Weill Medical College of Cornell University, New York, NY*; Turnbull, Rowena K, *MSKCC, NY, NY*; Kim, Euiseok J, *UT Southwestern Medical Center, Dallas, TX*; Lebel-Potter, Melanie, *MRC National Institute for Medical Research, London, UK*; Guillemot, François, *MRC National Institute for Medical Research, London, UK*; Joyner, Alexandra L, *MSKCC, New York, NY*

453 **B25** **Specification and differentiation of habenular and thalamic neurons by the combined action of Pax6, Gbx2 and Shh.** Chatterjee, Mallika; Li, James, *University of Connecticut Health Center, Farmington, CT*

454 **B26** **The role of Sip1 in cranial neural crest development.** Rogers, Crystal; Bronner-Fraser, Marianne, *California Institute of Technology, Pasadena, CA*

455 **B27** **Interaction between Cdx transcription factors and the Retinoic Acid pathway in patterning the posterior neural plate.** Chang, Jessie, *University of Chicago, Chicago, IL*; Skromne, Isaac, *University of Miami, Coral Gables, FL*; Ho, Robert, *University of Chicago, Chicago, IL*

456 **B28** **Merging anterior-posterior and dorsal-ventral markers to trace neuronal lineages in the mouse brainstem.** Hollands, Carolyn; Droho, Steve; Crone, Steve; Sharma, Kamal, *The University of Chicago, Chicago, IL*

457 **B29** **GDF11 regulates temporal progression of neurogenesis but not anterior-posterior patterning in the zebrafish spinal cord.** Najjar, Mejdi; Huang, Bryant; Skromne, Isaac, *University of Miami, Dept. of Biology, Coral Gables, FL*

458 **B30** **Regulating the function of Twist, an essential factor in neural crest development and tumor progression.** Lander, Rachel; Nordin, Kara; LaBonne, Carole, *Northwestern University, Evanston, IL*

459 **B31** **The role of Miz-1 in EMT and migration in the neural crest.** Kerosuo, Laura K.; Bronner-Fraser, Marianne, *California Institute of Technology Biology, Pasadena, CA*

460 **B32** **Transcription factors Gata4 and Gata6 play compensatory roles in pancreas development.** Xuan, Shouhong, *Columbia University, New York, NY*; Borok, Matthew, *Columbia University, New York, NY*; Duncan, Stephen, *Medical College of Wisconsin, Milwaukee, WI,*; Sussel, Lori, *Columbia University, New York, NY*

461 **B33** **Dynamic expression pattern of Tbx2 and Tbx3 in the developing and adult mouse pancreas.** Begum, Salma, *Columbia University Genetics & Development, New York, NY*; Papaioannou, Virginia, *Columbia University, New Yorki, NY*

462 **B34** **The LIM cofactor Ldb1 is enriched in pancreatic islet cells and required for proper cell development and function.** Hunter, Chad, *Vanderbilt University Medical Center, Nashville, TN*; Cohen, Tsadok, *Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, MD*; Ediger, Benjamin, *Children's Hospital of Philadelphia, Philadelphia, PA*; Wilcox, Crystal, *Children's Hospital of Philadelphia, Philadelphia, PA*; Dixit, Shilpy, *Vanderbilt University Medical Center, Nashville, TN*; Westphal, Heiner, *Kennedy*

Shriver National Institute of Child Health and Human Development, Bethesda, MD; Stein, Roland, *Vanderbilt University Medical Center, Nashville, TN*; May, Catherine, *Children's Hospital of Philadelphia, Philadelphia, PA*

463 **B35** **Vangl2, aPKC and VAMP1; the interactions of polarity proteins with trafficking vesicle proteins in the *Xenopus* oocyte.** Cha, Sang-Wook; Tadjuidje, Emmanuel; Wylie, Christopher; Heasman, Janet, *CCHMC, Cincinnati, OH*

464 **B36** **A novel role for a Cdc42 effector protein in *Xenopus* neurogenesis.** Hulstrand, Alissa, *University of Iowa Department of Biology, Iowa City, IA*; Houston, Douglas, *University of Iowa, Iowa City, IA*

465 **B37** **Expression in dorsal–lateral regions of Drosophila early embryos is supported by Grainyhead-mediated anti-repression.** Garcia, Mayra, *Caltech, Pasadena, CA*; Stathopolous, Angelike, *Caltech, Pasadena, CA*

466 **B38** **A high throughout sequencing-based screen for sea urchin skeletal patterning genes.** Reyna, Arlene; Hammeduddin, Hajerah; Li, Christy; Bardot, Evan; Lee, David; Hewitt, Finnegan; Piacentino, Michael; Ferrell, Patrick; Chavez, James, Core, Amanda; Coulombe-Huntington, Jasmin, *Boston, MA*; Poustka, Albert, *Berlin, Germany;* Bradham, Cynthia A., *Boston University Biology, Boston, MA*

467 **B39** **Identification of the gene responsible for the wings apart phenotype in *Drosophila melanogaster*.** Morriss, Ginny R, *University of New Mexico, Albuquerque, NM*; Jaramillo, Carmelita T, *University of New Mexico, Albuquerque, NM*; Cripps, Richard M, *University of New Mexico, Albuquerque, NM*

468 **B40** **Live imaging of stomatal determinants reveals dynamic interaction among precursor cells.** Peterson, Kylee, *Dept of Biology, University of Washington, Seattle, WA*; Rychel, Amanda, *Dept of Biology, University of Washington, Seattle, WA*; Torii, Keiko, *Dept of Biology, University of Washington and PREST, JST, Tokyo 102-0075, Japan*

Development and Evolution

469 **B41** **Functional genetic and comparative genomic analysis of vector mosquito development.** Duman-Scheel, Molly, *Indiana Univ. Sch of Med-South Bend At Notre Dame Medical & Molecular Genetics, South Bend, IN*; Flannery, Ellen, *University of Notre Dame, South Bend, IN*; Behura, Susanta K., *University of Notre Dame, Notre Dame, IN*; Haugen, Morgan, *South Bend, IN*; Clemons, Anthony, *University of Notre Dame, South Bend, IN*; Severson, David W., *University of Notre Dame, Notre Dame, IN*

470 **B42** **The evolution of a regulatory linkage mediating sexually dimorphic trait development.** Butts, John C., *University of Dayton Biology, Dayton, OH*; Rebeiz, Mark, *University of Pittsburgh, Pittsburgh, PA*; Williams, Thomas, *University of Dayton, Dayton, OH*

471 **B43** **Doublesex expression is regulated by the Hox protein Abdominal-B.** Wang, Wei, *The University of Alabama, Tuscaloosa, AL*; Yan, Shun, *The University of Alabama, Tuscaloosa, AL*; Yoder, John, *The University of Alabama, Tuscaloosa, AL*

472 **B44** **Genetic patterning of the genitalia in the milkweed bug *Oncopeltus fasciatus*.** Aspiras, Ariel C.; Angelini, David, *American University Biology, Washington, DC*

473 **B45** **Independent instances of abdominal appendage evolution in sepsids have shared developmental basis.** Ferderer, Tanner, *North Dakota State University Biological Sciences, Fargo, ND*; Bowsher, Julia H., *North Dakota State University Biological Sciences, Fargo, ND*

474 **B46** **Evolution and function of Ftz and Ftz-F1 in Hemipteran insects.** Lu, Yong; Pick, Leslie, *University of Maryland, College Park, MD*

475 **B47** **Evolution of folded gastrulation: A comparison between *Drosophila melanogaster* and *Drosophila pseudoobscura*.** Arnold, Frederick; Dao, Kimberly; Geratowski, Jill; Hoang, Rachel, *Haverford College Dept. of Biology, Haverford, PA*

476 **B48** **Different developmental mechanisms underlie change in ovariole number caused by phenotypic plasticity and genetic background.** Sarikaya, Didem; Aseffa, Abel; Extavour, Cassandra, *Harvard University, Cambridge, MA*

477 **B49** **Examining the genetic basis for a phenotypic change in the red shouldered soapberry bug *Jadera haematoloma*.** Baker, Stacey L., *American University, Washington, DC*; Aspiras, Ariel C., *American University, Washington, DC*; Carroll, Scott P., *University of California, Davis, CA*; Andres, Jose A., *University of Saskatchewan, Saskatoon, SK, Canada*; Angelini, David R., *American University, Washington, DC*

478 **B50** **The influence of Bantam microRNA on the evolution of size.** Knauss, Jennifer; Angelini, David R, *American University, Washington, DC*

479 **B51** **Decapentaplegic and glass bottom boat regulate postembryonic leg development and lipid homeostasis in the flour beetle Tribolium castaneum.** Namigai, Erica; Suzuki, Yuichiro, *Wellesley College, Wellesley, MA*

480 **B52** **Leg regeneration in the red flour beetle, *Tribolium castaneum*.** Suzuki, Yuichiro; Mitten, Emilie; Shah, Mita; Sze, Christie, *Wellesley College Department of Biological Sciences, Wellesley, MA*

481 **B53** **Major embryological events of the mite *Archegozetes longisetosus*.** Barnett, Austen, *Southern Illinois University Carbondale Zoology, Carbondale, IL*; Thomas, Richard H., *Southern Illinois University Carbondale, Carbondale, IL*

482 **B54** **Deep conservation of the genetic program for cartilage development: the mechanism of invertebrate chondrogenesis.** Tarazona, Oscar, *University of Florida Deptartment of Biology, Gainesville, FL*; Slota, Leslie, *University of Florida Department of Biology, Gainesville, FL*; Cohn, Martin, *Howard Hughes Medical Institute, University of Florida, Department of Molecular Genetics and Microbiology & Department of Biology, Gainesville, FL*

483 **B55** **Divergence of neural plate border genes by enhancer modification.** Garnett, Aaron T., *University of Colorado, Boulder Ecology and Evolutionary Biology, Boulder, CO*; Square, Tyler, *University of Colorado, Boulder, CO*; Medeiros, Daniel M., *University of Colorado, Boulder, CO*

484 **B56** **Conserved functions of PAX3/7 during evolution.** Hayashi, Shinichiro, *INSERM-UPMC-Paris VI UMR S 787—Groupe Myologie, Paris, France*; Drayton, Bernadette; Aurade, Frédéric; Relaix, Frédéric, *Inserm U787, Paris, France*

485 **B57** **Nourish and perish: Characterizing the nutritional endoderm in Eleutherodactylus *coqui*.** Karadge, Uma B.; Elinson, Richard, *Duquesne University Biological Sciences, Pittsburgh, PA*

486 **B58** **Differential EcSmad2 expression in early development of the direct developing frog *Eleutherodactylus coqui*.** Chatterjee, Suman; Elinson, Richard, *Duquesne University*, *Pittsburgh, PA*

487 **B59** **Molecular anatomy of the developing limb bud in the coqúi frog, *Eleutherodactylus coqui*.** Gross, Joshua, *University of Cincinnati, Cincinnati, OH*; Kerney, Ryan, *Halifax, NS, Canada*; Hanken, James, *Cambridge, MA;* Tabin, Clifford, *Boston, MA*

488 **B60** **Comparison of circadian gene expression in the eye and pronephros of *Xenopus laevis*: more like a mammal than a fish?** Redmann, Matthew, *Appleton, WI*; Curran, Kristen, *University of Wisconsin-Whitewater, Whitewater, WI*

489 **B61** **Role of Plakophilin-3, a desmosomal catenin, in *Xenopus laevis* development.** Munoz, William, *MD Anderson Cancer Center Biochemistry and Molecular Biology, Houston, TX*; Cho, Kyucheol, *Salk Institute for Biological Studies, La Jolla, CA*; Lee, Moonsup, *MD Anderson Cancer Center, Houston, TX*; Ji, Hong, *MD Anderson Cancer Center, Houston, TX*; Vleminckx, Kris, *Ghent University, Ghent, Belgium*; Kloc, Malgorzata, *Methodist Hospital Research Institute, Houston, TX*; McCrea, Pierre, *MD Anderson Cancer Center, Houston, TX*

490 **B62** ***Xenopus* germline nanos1 is translationally repressed by a novel structure-based mechanism.** Luo, Xueting, *University of Miami Cell Biology, Miami, FL*

491 **B63** **Does progesterone have a role in embryo-maternal communication in *Monodelphis domestica*?** Johnson, Joanna M., *Oberlin College Biology, Oberlin, OH*

492 **B64** **Developmental mechanisms underlying mammalian digit reduction: A case study in the pig, *Sus scrofa*.** Sears, Karen E., *Univ of Illinois Animal Biology, Urbana, IL*; Bormet, Allison, *Bloomington, IN*; Cooper, Lisa, *Urbana, IL*; Powers, Lisa, *Urbana, IL*; Wheeler, Matthew, *Urbana, IL*; Marcot, Jonathan, *Urbana, IL*

493 **B65** **Ontogeny of cocaine- and amphetamine regulated transcript (CART) peptides in selected limbic structures of the guinea pig.** Zakowski, Witold, *University of Warmia and Mazury in Olsztyn, Poland, Olsztyn, Poland*; Robak, Anna, *Department of Comparative Anatomy, Faculty of Biology, University of Warmia and Mazury, Olsztyn, Poland*; Bogus-Nowakowska, Krystyna, *Department of Comparative Anatomy, Faculty of Biology, University of Warmia and Mazury, Olsztyn, Poland*; Rowniak, Maciej, *Department of Comparative Anatomy, Faculty of Biology, University of Warmia and Mazury, Olsztyn, Poland*

494 **B66** **The evolution of the vertebrate cerebellum.** Butts, Thomas, *King's College London, London, UK*; Wingate, Richard, *MRC Centre for Developmental Biology, London, UK*

495 **B67** **A unique secreted peptide regulates early embryogenesis in vertebrates.** Chng, Serene, *Institute of Medical Biology Human Embryology, Singapore, Singapore*; Tian, Jing, *Institute of Medical Biology, A*STAR, Singapore, Singapore*; Reversade, Bruno, *Institute of Medical Biology, A*STAR, Singapore, Singapore*

496 **B68** **The evolution of mesoderm from pluripotent tissue.** Ferjentsik, Zoltan, *Univ of Nottingham School of Biology, Nottingham, UK*; Johnson, Andrew, *Univ of Nottingham School of Biology, Nottingham, UK*

497 **B69** **Isolation and characterization of a zebrafish Perlipin.** Thummel, Ryan, *Wayne State University Department of Anatomy and Cell Biology, Detroit, MI*; Kimler, Vickie, *Wayne State University School of Medicine, Detroit, MI*; Granneman, James, *Wayne State University School of Medicine, Detroit, MI*

498 **B70** **Lung development in lungless salamanders!** Lewis, Zachary R., *Harvard University Dept of Organismic & Evolutionary Biology, Cambridge, MA*; Kerney, Ryan, *Dalhousie Univeristy, Halifax, NS, Canada*; Hanken, James, *Harvard University - Dept of Organismic & Evolutionary Biology, Cambridge, MA*

499 **B71** **Investigating the role of FGF-regulated transcription factors ETV4 and ETV5 in lung development and maturation.** Herriges, John, *University of Wisconsin, Madison, WI*; Sun, Xin, *Madison, WI*

500 **B72** **How the chicken lost its penis: developmental basis of external genital reduction in birds.** Herrera, Ana M.; Simone, Shuster; Perriton, Claire; Cohn, Martin, *HHMI, University of Florida College of Medicine, Department of Molecular Genetics and Microbiology & Department of Biology Gainesville, FL*

501 **B73** **Trunk neural crest cells form an ectomesenchymal dermis in the turtle plastron.** Cebra-Thomas, Judith A., *Millersville University Dept of Biology, Millersville, PA*; Shah, Sonal, *Millersville University, Millersville, PA*; Mangat, Gulnar, *Millersville University, Millersville, PA*; Doles, Tania, *Swarthmore College, Swarthmore, PA*; Terrell, Anne, *Millersville University, Millersville, PA*; McCarthy, James, *Millersville University, Millersville, PA*; Yin, Melinda, *Swarthmore College, Swarthmore, PA*; Gilbert, Scott, *Swarthmore College, Swarthmore, PA*

502 **B74** **Indirect development and the bilaterian body plan.** Arenas-Mena, Cesar, *College of Staten Island/City Univ of NY Biology, Staten Island, NY*

503 **B75** **Wnt signaling promotes oral fates during regeneration and embryogenesis in the cnidarian *Nematostella vectensis*.** Trevino, Michael; Harmon, Shane; Burton, Patrick M., *Wabash College Biology, Crawfordsville, IN*

504 **B76** **Gene regulatory network reorganization for the evolution of novelty in Echinoderms.** Hinman, Veronica; McCauley, Brenna; Yankura, Kristen; Alys, Cheatle, *Carnegie Mellon U, Pittsburgh, PA*

505 **B77** **Spatial expression patterns of delta, gcm and brachyury in the cidaroid sea urchin *Eucidaris* tribuloides.** Sweet, Hyla; Sharma, Deepika; Covington, Rae Ann; Wooten, Alicia; Bednarz, John, *Rochester Inst of Tech Dept of Biol Sci, Rochester, NY*

506 **B78** **Breaking symmetry in early embryos of *Platynereis dumerilii*.** Schneider, Stephan, *Iowa State University, Ames, IA*

507 **B79** **GBX2 target gene identification reveals Usher syndrome genes PCD15 and USH2A.** Roeseler, David A., *University of Missouri Biological Sciences, Columbia, MO*; Sachdev, Shrikesh, *University of Missouri-Columbia, Columbia, MO*; Joshi, Trupti, *University of Missouri-Columbia, Columbia, MO*; Hwang, ChanHo, *National Institutes of Health, Bethesda, MD*; Xu, Dong, *University of Missouri-Columbia, Columbia, MO*; Hannink, Mark, *University of Missouri-Columbia, Columbia, MO*; Waters, Samuel, *University of Missouri-Columbia, Columbia, MO*

508 **B80** **Expression analyses of Mc1r in the blind Mexican cavefish, *Astyanax mexicanus*.** Stahl, Bethany, *University of Cincinnati, Cincinnati, OH*; Gross, Joshua, *University of Cincinnati, Cincinnati, OH*

509 **B81** **Proteoglycan gene expression during Lmx1b-directed limb dorsalization reveals disparate conservation.** Feenstra, Jennifer, *Loma Linda University, Loma Linda, CA*; Estes, Molly, *Loma Linda University, Loma Linda, CA*; Oberg, Kerby, *Loma Linda University, Loma Linda, CA*

510 **B82** **How somitic cells migrate into the axolotl limb bud and vertebrate appendicular muscle evolution.** Sefton, Elizabeth; Piekarski, Nadine; Hanken, James, *Harvard University, Cambridge, MA*

511 **B83** **The embryonic origin of the axolotl skull (*Ambystoma mexicanum*).** Piekarski, Nadine; Hanken, James, *Harvard University Organismic & Evolutionary Biology, Cambridge, MA*

512 **B84** **Major shifts in the evolution of somitogenesis: The reptile Anolis carolinensis represents a fourth type of segmentation clock among vertebrates.** Eckalbar, Walter, *Arizona State University, Tempe, AZ*; Lasku, Eris, *Arizona State University, Tempe, AZ*; Infante, Carlos, *University of Georgia, Athens, GA*; DeNardo, Dale, *Arizona State University, Tempe, AZ*; Losos, Jonathan, *Harvard University, Cambridge, MA*; Rawls, Alan, *Arizona State University, Tempe, AZ*; Wilson-Rawls, Jeanne, *Arizona State University, Tempe, AZ*; Kusumi, Kenro, *Arizona State University, Tempe, AZ*

513 **B85** **Morphology and regression of the dental lamina.** Buchtova, Marcela, *Academy of Sciences Instit of Animal Physiology & Genetics, Brno, Czech Republic*; Zahradnícek, Oldrich, *Charles University, Prague, Czech Republic*; Janecková, Eva, *Brno, Czech Republic*; Matalova, Eva, *Brno, Czech Republic*; Tucker, Abigail S., *King´s College London Dental Institute, London, UK*

514 **B86** **Filling in the gaps: First look at neural crest migration in a non-Avian reptile.** Diaz, Raul E.; Baumann, Diana; Trainor, Paul, *Stowers Institute for Medical Research, Kansas City, MO*

515 **B87** ***Withdrawn***

516 **B88** **Uncovering the ancestral role of FGF signaling in neural development.** Cunningham, Doreen D.; Casey, Elena S., *Georgetown University Biology, Washington, DC*

517 **B89** **Vertebrate kidney innovation by ponzr1.** Bedell, Victoria M., *Mayo Clinic Biochemistry and Molecular Biology, Rochester, MN*; Person, Anthony, *Madison, WI*; Larson, Jon, *University of Minnesota, Minneapolis, MN*; McLoon, Anna, *Cambridge, MA*; Balciunas, Darius, *Temple University, Philadelphia, PA*; Clark, Karl, *Mayo Clinic, Rochester, MN*; Nelson, Katie, *Mayo Clinic, Rochester, MN*; Bill, Brent, *University of Minnesota, Los Angeles, CA*; Schimmenti, Lisa, *University of Minnesota, Minneapolis, MN*; Beiraghi, Soraya, *University of Minnesota, Minneapolis, MN*; Ekker, Stephen, *Mayo Clinic, Rochester, MN*

518 **B90** ***Withdrawn***

519 **B91** **Endodermal patterning in the basal deuterostome, *Saccoglossus kowalevskii*.** Verardo, Andrew L., *Georgetown University Biology, Washington, DC*; Casey, Elena S., *Georgetown University, Washington, DC*

520 **B92** **Did natural selection construct metazoan developmental sequences?** Nelson, Paul, *Biola University, Glenview, IL*

Gene Regulation

521 **B93** **Inhibition of Tom40 or Hsp60 expression by small interference RNA (siRNA) causes negative effects on michondria replication system at Human liver cancer celline, HEP3B.** Hwang, You Jin; Bae, Sung Hun; Park, Gun Hyun; Kim, Ji Sun; Yoon, Jae Hee; Kim, Dae Young, *Inchon, Republic of Korea*

522 **B94** **Pontin and Reptin: Two novel regulators of the transcriptional response to hypoxia.** Perez-Perri, Joel I., *Buenos Aires, Argentina*; Cockman, Matthew, *Oxford, UK*; Dekanty, Andrés, *Buenos Aires, Argentina*; Ratcliffe, Peter J., *Oxford, UK*; Wappner, Pablo, *Buenos Aires, Argentina*

523 **B95** **Oxygen-sensitive gene expression in *C. elegans*.** Feng, Dingxia, *Iowa State University, Ames, IA*; Saldanha, Jenifer, *Iowa State University, Ames, IA*; Ye, Qi, *Iowa State University, Ames, IA*; Powell-Coffman, Jo Anne, *Iowa State University Genetics, Development, & Cell Biology, Ames, IA*

524 **B96** **Identification of an insulin-like signaling pathway in the parasitic nematode Brugia malayi.** Garland, Brenda; Sackett, Peter; Crossgrove, Kirsten, *University of Wisconsin-Whitewater Biological Sciences, Whitewater, WI*

525 **B97** **Dll-B knockdown and overexpression in the ascidian *Ciona intestinalis*.** Blanchette, Matthew D.; Irvine, Steven, *University of Rhode Island Dept of Biological Sciences, Kingston, RI*

526 **B98** **A conserved boundary element defines the start of the HoxB Complex.** Nolte, Christof D.; Krumlauf, Robb, *Stowers Institute for Medical Research Robb Krumlauf Lab, Kansas City, MO*

527 **B99** **Experimental evidence for embedded cis-regulatory enhancers within Hox protein-coding regions.** Alexander, Tara B., *Stowers Instit for Medical Research, Kansas City, MO*; Ahn, Youngwook, *Stowers Institute for Medical Research, Kansas City, MO*; Lin, Michael F., *MIT Computer Science and Artificial Intelligence Laboratory, Cambridge, MA*; Kellis, Manolis, *MIT Computer Science and Artificial Intelligence Laboratory, Cambridge, MA*; Krumlauf, Robb, *Stowers Institute for Medical Research, Kansas City, MO*

528 **B100** **The Wnt/bcatenin target, Mesogenin1 (Msgn1), directly regulates the Notch pathway during mammalian somitogensis.** Chalamalasetty, Ravindra B.; Dunty, Jr, William C.; Biris, Kristin K.; Beisaw, Arica; Feigenbaum, Lionel, *National Cancer Institute, Frederick, MD*; Yoon, Jeong K, *Scarborough*; Kyba, Michael, *Minneapolis*; Yamaguchi, Terry P, *Frederick, MD*

529 **B101** **A gene regulatory network in which FoxD4/5 regulates neural fate via both transcriptional activation and repression.** Moody, Sally A., *George Washington Univ Dept of Anat & Regenerative Biol, Washington, DC*; Mhaske, Pallavi, *George Washington University, Washington, DC*; Hoffbauer, Jen, *George Washington Univ, Washington, DC*; Neilson, Karen, *Washington*; Klein, Steven, *Washington*; Yan, Bo, *Washington*; Mood, Kathy, *Frederick*; Daar, Ira, *Frederick*

530 **B102** **Temporal and spatio-regulation of Sox3 by thyroid hormone suggests a role for Sox3 in epithelial progenitor development during intestinal metamorphosis in *Xenopus laevis*.** Fu, Liezhen, *Bethesda, MD*; Sun, Guihong, *National Institutes of Health, Bethesda, MD*; Hasebe, Takashi, *Nippon Medical School, Kawasaki, Japan*; Das, Biswajit, *National Institutes of Health, Bethesda, MD*; Ishizuya-Oka, Atsuko, *Nippon Medical School, Kawasaki, Japan*; Shi, Yun-Bo, *National Institutes of Health, Bethesda, MD*

531 **B103** **Twist1 directly regulates genes associated with cell proliferation and migration in developing heart valves.** Horn, Mary, *Cincinnati Children's Hospital Medical Center/University of Cincinnati, Cincinnati, OH*; Yutzey, Katherine, *Cincinnati Children's Hospital Medical Center/University of Cincinnati, Cincinnati, OH*

532 **B104** **SUMO regulation of SoxE factors during neural crest development.** Lee, Pei-Chih; Taylor-Jaffe, Kimberly; LaBonne, Carole, *Northwestern University BMBCB, Evanston, IL*

533 **B105** **Snail2-PHD12 interaction recruits an epigenetic repressive complex that mediates neural crest epithelial-mesenchymal transition.** Strobl-Mazzulla, Pablo H., *Instituto de Investigaciones Biotecnologicas, Chascomus, Argentina*; Bronner-Fraser, Marianne, *Pasadena, CA*

534 **B106** **LMO4 Modulates Slug/Snail Function in Neural Crest Development.** Ochoa, Stacy D.; LaBonne, Carole, *Northwestern University Molecular Biosciences, Evanston, IL*

535 **B107** **Regulating the function of Twist, an essential factor in neural crest development and tumor progression.** Lander, Rachel M.; Nordin, Kara; LaBonne, Carole, *Northwestern University Molecular Biosciences, Evanston, IL*

536 **B108** **Twist1 directly regulates genes associated with cell proliferation and migration in developing heart valves.** Horn, Mary, *Cincinnati Children's Hospital Medical Center/University of Cincinnati, Cincinnati, OH*; Yutzey, Katherine, *Cincinnati Children's Hospital Medical Center/University of Cincinnati, Cincinnati, OH*

537 B109 Co-regulation of mutual target genes by Ntla and Tbx16 in zebrafish mesoderm development. Jahangiri, Leila, *University of Cambridge Physiology, Development, Neuroscience, Cambridge, UK*; Wardle, Fiona, *King's College London, London, UK*

538 B110 Multiple mechanisms negatively regulate *C. elegans* tbx-2 expression. Milton, Angenee C.; Okkema, Peter, *University of Illinois at Chicago Biological Sciences Dept, Chicago, IL*

539 B111 Examining the role of SUMOylation in C. elegans T-box transcription factor TBX-2 function. Huber, Paul; Crum, Tanya; Okkema, Peter, *University of Illinois at Chicago, Chicago, IL*

540 B112 *C. elegans* TBX-2 is a SUMOylation dependent transcriptional repressor. Clary, Lynn M.; Ronan, Tom J.; Okkema, Peter G., *University of Illinois at Chicago, Chicago, IL*

541 B113 Long range transcriptional regulation in the developing eye. Evans, Nicole; Strom, Amy; Barolo, Scott, *University of Michigan, Ann Arbor, MI*

542 B114 Essential enhancer elements regulate Pax6 in pancreas and eye development. Carbe, Christian; Hertzler, Kristi; Zhang, Xin, *IU School of Medicine, Indianapolis, IN*

543 B115 Early and late expression of D-Pax2 during Drosophila external sensory organ development is controlled by separate upstream enhancers. Johnson, Seth, *Colby College, Waterville, ME*; Smiley, Sarah, *Colby College, Waterville, ME*; Harmon, Katharine, *Colby College, Waterville, ME*; Still, Frances, *Colby College, Waterville, ME*; Kavaler, Joshua, *Colby College, Waterville, ME*

544 B116 Transcriptional Regulation of the Retinoblastoma family member p107 by Dlx homeobox genes in forebrain and retinal development. Zagozewski, Jamie L., *University of Manitoba Biochemistry and Medical Genetics, Winnipeg, Canada*; Pind, Molly, *Winnipeg, MN, Canada*; Eisenstat, David D., *Winnipeg, MN, Canada*

545 B117 Study of XtRic-8 during the neural development of X. tropicalis. Toro-Tapia, Gabriela, *University of Concepcion Biochemistry and Molecular Biology, Concepcion, Chile*; Arriagada, Cecilia, *University of Concepcion, Concepcion, Chile*; Fuentealba, Jaime, *University of Concepcion, Concepcion, Chile*; Hinrichs, Maria Victoria, *University of Concepcion, Concepcion, Chile*; Olate, Juan, *University of Concepcion, Concepcion, Chile*; Torrejon, Marcela, *University of Concepcion, Concepcion, Chile*

546 B118 Multiple transcription factors regulate spatially restricted expression of cadherin-7 in developing neural epithelium. Prasad, Maneeshi, *University of South Dakota Biology, Vermillion, SD*; Paulson, Alicia, *University of South Dakota, Vermillion, SD*

547 B119 Spatial regulation of achaete via global activation and repression by Hairy and Delta. Lee, Ji Inn, *University of Illinois at Chicago, Chicago, IL*; Joshi, Meghana, *Chicago, IL*; Orenic, Teresa, *University of Illinois at Chicago, Chicago, IL*

548 B120 Preaxial polydactyly caused by hyperactive WNT Signaling in Sclerostin/Sostdc1 double knockouts. Collette, Nicole M., *Lawrence Livermore National Lab, Livermore, CA*; Yee, Cristal, *Merced*; Murugesh, Deepa, *Lawrence Livermore National Lab, Livermore, CA*; Harland, Richard, *University of California, Berkeley, Berkeley, CA*; Loots, Gabriela, *Lawrence Livermore National Lab, Livermore, CA*

549 B121 Imprinting analysis in the Acrodysplasia region of mouse chromosome 12. McMurray, Erin, *Chicago, IL*; Rogers, Eric, *Chicago, IL*; Schmidt, Jennifer, *Chicago, IL*

550 B122 The development of mouse patella tendon. Liu, Chia-Feng, *Cincinnati Children's Hospital Medical Center Developmental Biology, Cincinnati, OH*; Aschbacher-Smith, Lindsey, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Barthelery, Nicolas, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*; Butler, David, *University of Cincinnati, Cincinnati, OH*; Wylie, Christopher, *Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

551 B123 GBX2 target gene identification reveals Usher syndrome genes PCD15 and USH2A. Roeseler, David, *University of Missouri-Columbia, Columbia, MO*; Sachdev, Shrikesh, *University of Missouri-Columbia, Columbia, MO*; Joshi, Trupti, *University of Missouri, Columbia, MO*; Hwang, ChanHo, *National Institutes of Health, NIDCD, Bethesda, MD*; Xu, Dong, *University of Missouri-Columbia, Columbia, MO*; Hannink, Mark, *University of Missouri-Columbia, Columbia, MO*; Waters, Samuel, *University of Missouri-Columbia, Columbia, MO*

552 B124 FOG-2 Mediated Recruitment of the NuRD Complex Regulates Cardiocyte Proliferation during Heart Development. Jerde, Audrey, *University of Chicago, Chicago, IL*; Gao, Zhiguang, *Chicago, IL*; Svensson, Eric, *University of Chicago, Chicago, IL*

553 B125 Turning off Bone Morphogenetic Protein (BMP) 2. Rogers, Melissa B., *UMDNJ-NJ Medical School Biochemistry &Molec.Biol, Newark, NJ*; Kruithof, Boudewijn, *Newark, NJ*; Nagarajan, Narayani, *Newark, NJ*; Fritz, David, *Newark, NJ*; Xu, Junwang, *Jackson, MS*; Frank, David, *Nashville, TN*; Mortlock, Douglas, *Nashville, TN*

554 B126 FoxH1 function in target gene selection and in transcriptional noise control. Chiu, William, *University of California, Irvine, CA*; Blitz, Ira, *University of California, Irvine, CA*; Charney, Rebekah, *University of California, Irinve, CA*; Cho, Jin, *University of California, Irvine, CA*; Park, Eddie, *University of California, Irvine, CA*; Gilchrist, Mike, *National Institute for Medical Research, London, UK*; Cho, Ken W.Y., *Univ of California Develop & Cell Biology, Irvine, CA*

555 B127 Cooperative repression is essential to interpret the Hedgehog gradient. Ramos, Andrea, *University of Michigan, Ann Arbor, MI*; Parker, Dave, *University of Michigan, Ann Arbor, MI*; Barolo, Scott, *University of Michigan, Ann Arbor, MI*

556 B128 The mutational basis for the repeated evolution of a cis-regulatory element generating morphological diversity. Rogers, William, *University of Dayton, Dayton, OH*; Davis, Kristen, *University of Dayton, Dayton, OH*; Salomone, Joe, *University of Dayton, Dayton, OH*; Williams, Thomas, *University of Dayton, Dayton, OH*

557 B129 Premature differentiation and reversal of imprinted X-chromosome inactivation in extraembryonic ectoderm lacking paternally derived Xist. Mugford, Joshua W., *Univ of North Carolina-Chapel Hill Dept of Genetics, CB 7264, Chapel Hill, NC*; Yee, Della, *Chapel Hill, NC*; Magnuson, Terry, *Chapel Hill, NC*

558 B130 A role for Xenopus Zygote Arrest 2 (Xzar2) in the regulation of key cell cycle mRNAs. Charlesworth, Amanda, *University of Colorado Denver Integrative Biology, Denver, CO*; Carter, Gwen, *Little Rock, AR*; Cook, Jonathan, *Denver, CO*; Holt, Justin, *Little Rock, AR*; Khat, Terry, *Denver, CO*; Lavender, Heather, *Little Rock, AR*; MacNicol, Angus, *Little Rock, AR*; Silva, Kevin, *Denver, CO*; Wang, Yi Ying, *Little Rock, AR*; Wilczynska, Anna, *Little Rock, AR*; Yamamoto, Tomomi, *Denver, CO*

559 B131 Asian Sand Dust(ASD)-Particle Matter(PM) effect on overexpress of tissue Transglutaminase2. Hwang, You-Jin, *Gachon University of Medicine and Science, Incheon, Korea*; Park, Gunhyun, *Gachon University of Medicine and Science Division of Biological Science, Incheon, Korea*; Bae, Sung-Hun, *Gachon University of Medicine and Science, Incheon, Korea*; Kim, Myung-Jin, *Gachon University of Medicine and Science, Incheon, Korea*; Kim, Ji-Sun, *Gachon University of Medicine and Science, Incheon, Korea*; Yoon, Jae-Hee, *Gachon University of Medicine and Science, Incheon, Korea*; Kim, Dae-Young, *Gachon University of Medicine and Science, Incheon, Korea*

560 **B132** **The expression of urokinase-type plasminogen activator is induced in cultured mouse blastocyst by the high glucose concentration.** Sánchez-Santos, Alejandra, *FES Iztacala, UNAM, Tlalnepantla, Mexico*; Vilches-Flores, Alonso, *FES Iztacala, UNAM, Tlalnepantla, Mexico*; Martínez-Hernández, María Guadalupe, *FES-Iztacala, UNAM, Tlalnepantla, Mexico*; Castillo-Trápala, Alejandro, *FES Iztacala, UNAM, Tlalnepantla, Mexico*; Baiza-Gutman, Luis Arturo, *FES Iztacala, UNAM, Tlalnepantla, Mexico*

561 **B133** **Comprehensive survey and perturbation of the transcriptional control of ptf1a.** Pashos, Evanthia E., *University of Pennsylvania Cell and Developmental Biology, Philadelphia, PA*; Fisher, Shannon, *University of Pennsylvania, Philadelphia, PA*

562 **B134** **Multiple Cis-Acting Enhancers Regulate Temporal and Spatial Expression of the Human LHX3 Gene in the Developing Pituitary.** Park, Soyoung, *Indiana Univ., Indianapolis, IN*; Mullen, Rachel, *Indiana Univ., Indianapolis, IN*; Rhodes, Simon, *Indiana Univ., Indianapolis, IN*

563 **B135** **Distinct functional constraints partition sequence conservation in a cis-regulatory element.** Barriere, Antoine, *Chicago, IL*; Gordon, Kacy, *University of Chicago, Chicago, IL*; Ruvinsky, Ilya, *Chicago, IL*

564 **B136** **Metallothionein and Cadmium Toxicity in Developing Zebrafish.** Malone-Oliver, Ana, *Roger Williams University, Bristol*; O'Shea, Stephen, *Roger Williams University, Bristol, RI*; Warren, Kerri S., *Roger Williams Univ Biol, Bristol, RI*

565 **B137** **The Dapper genes are expressed in sites of body elongation during later mouse development.** Dietrich, S, *University of Portsmouth, Portsmouth, UK*; Sensiate, L. A, *State University of Campinas, Campinas, Brazil*; Pedrosa, A. V., *State University of Campinas, Campinas, Brazil*; da Veiga, F. C, *State University of Campinas, Campinas, Brazil*; Alvares, Lúcia, *State University of Campinas, Campinas, Brazil*